CH2MHILL

13921 Park Center Rd., Suite 600
Herndon, VA 20171
Tel 703-471-1441
Fax 703-796-6192

September 8, 2006

Ms. Mirtha Capiro
Project Coordinator
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Subject: **Revised Data Management Plan (DMP)**
Rohm and Haas Chemicals LLC, Reading, Ohio, Site
USEPA ID No. OHD 000 724 138

Dear Ms. Capiro:

The enclosed revised DMP is being submitted to USEPA at the request of the Rohm and Haas Company for the Rohm and Haas Chemicals LLC, Reading, Ohio, Site.

Please feel free to contact Carl Coker/Rohm and Haas at (215) 785-7193 or myself at (571) 230-7668 if you have any questions.

Sincerely,

CH2M HILL

Jennifer Telford
Project Manager

CC: Carl Coker/Rohm and Haas
Paul Cichy/Rohm and Haas

Site Investigation and Remediation

Data Management Plan

for

Rohm and Haas Chemicals LLC Facility

EPA ID No. OHD 000 724 138

Reading, OH

Prepared for

Rohm and Haas Company

Croydon, PA

September 8, 2006

CH2MHILL

Contents

Section Page

Appendix

Tables

Figures

Acronyms and Abbreviations

BAT	Batch
CD-ROM	Compact Disc-Read-Only Memory
CFM	Chemical Field Measurement
COC	Chain Of Custody
CRG	Corporate Remediation Group
CSV	Comma-Separated Variable
DHP	Down Hole Point
DM	Data Management Contractor
DMP	Data Management Plan
DQOs	Data Quality Objectives
DRA	Drilling Activity
DWG	Drawing (AutoCAD native format file extension)
DXF	Digital Exchange Format
EC	Environmental Contractor
EDDs	Electronic Data Deliverables
EDP	Electronic Data Processor
ELDC	Electronic Laboratory Data Checker, also refers to EFDC – Electronic Field Data Checker
EPAR5	USEPA Region 5
FTP	File Transfer Protocol
GPS	Global Positioning System
GSMP	Geologic Sample
GWTR	Groundwater Level
LAB	Laboratory Contractor
LIMS	Laboratory Information Management System
LOC	Location
LTH	Lithology
MB	MegaByte
MS	Microsoft
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
SDG	Sample Delivery Group
SITE	Site
SMP	Sample
STL	Severn Trent Laboratories
USEPA	United States Environmental Protection Agency
TBL	Water Table
TRSQC	Test/Results with Quality Control
WEL	Well
WSG	Well Construction

1 Introduction

The Rohm and Haas Chemicals LLC facility (formerly known as Morton International, Inc.; referred to as the "Cincinnati site" or the "site" in this document), located in Reading, Ohio, has been operated as an active chemical blending and manufacturing facility since 1950 (Geomatrix Consultants, Inc., 2000). Rohm and Haas Company acquired the site and is currently responding to a United States Environmental Protection Agency (USEPA) Region 5 Resource Conservation and Recovery Act (RCRA) § 3013 Administrative Order. USEPA Region 5 (EPAR5) modified this order to include electronic data submittals and a data management plan (DMP). This DMP has been written in response to the modified order and describes the system that will be used to manage electronic data generated by ongoing investigations and streamline the production of electronic data deliverables (EDDs) for submission to EPAR5 and Rohm and Haas Company.

The objectives that are critical to the success of the data management process are as follows:

- Standardize and facilitate the transfer of field-generated data into the data management system.
- Minimize the uncertainties associated with the data, data-derived products, and interpretation of results through quality assurance and quality control (QA/QC) measures and practices.
- Provide Rohm and Haas with EQuIS-compliant data in the format they specify that is suitable for decision making and can be reliably used to analyze alternatives related to remediation strategies.
- Provide EPAR5 with EQuIS-compliant EDDs in the format they specify.

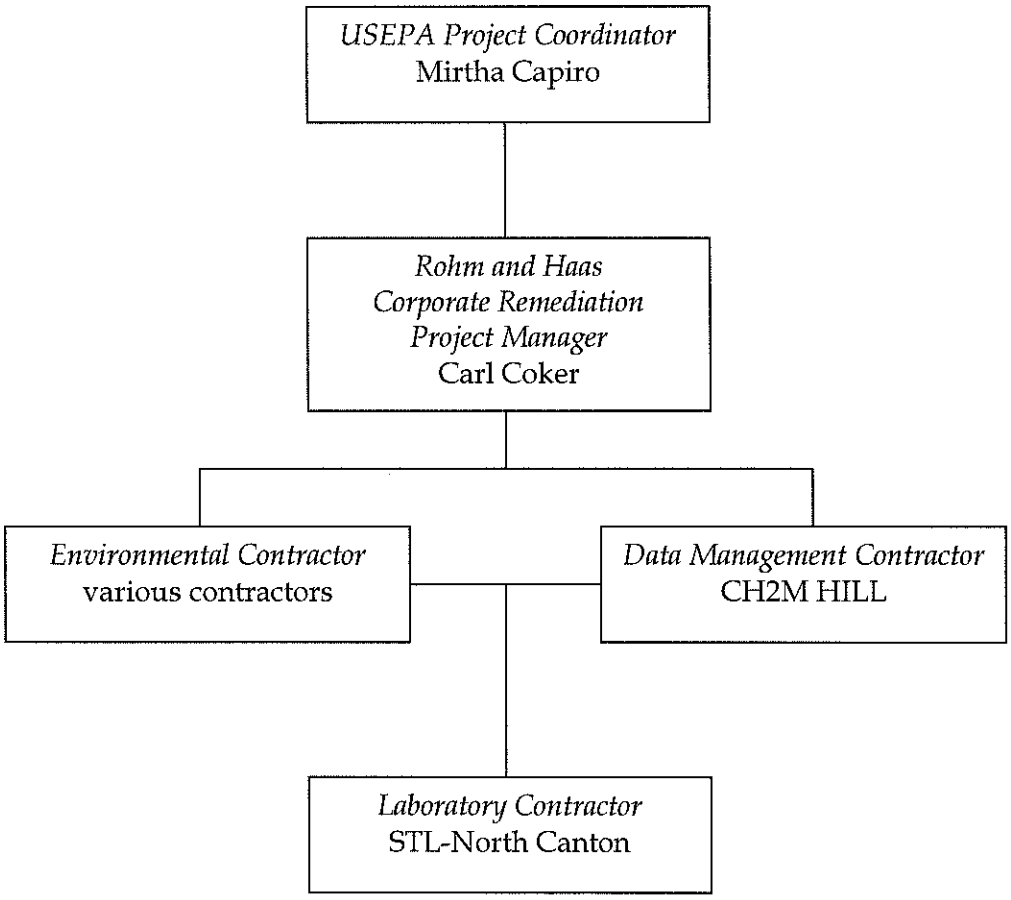
2 Data Collection and Management Team

The data collection and management team for the Cincinnati site currently consists of the following members:

- Environmental Contractor (EC) – various contractors
- Laboratory Contractor (LAB) – Severn Trent Laboratories (STL), Inc. (North Canton, Ohio)
- Data Management Contractor (DM) – CH2M HILL

The organization chart shown in Figure 1 illustrates the relationship between the data collection and management team, the Rohm and Haas Corporate Remediation project manager, and the USEPA project coordinator for the Cincinnati site.

FIGURE 1
Data Management Organization Chart



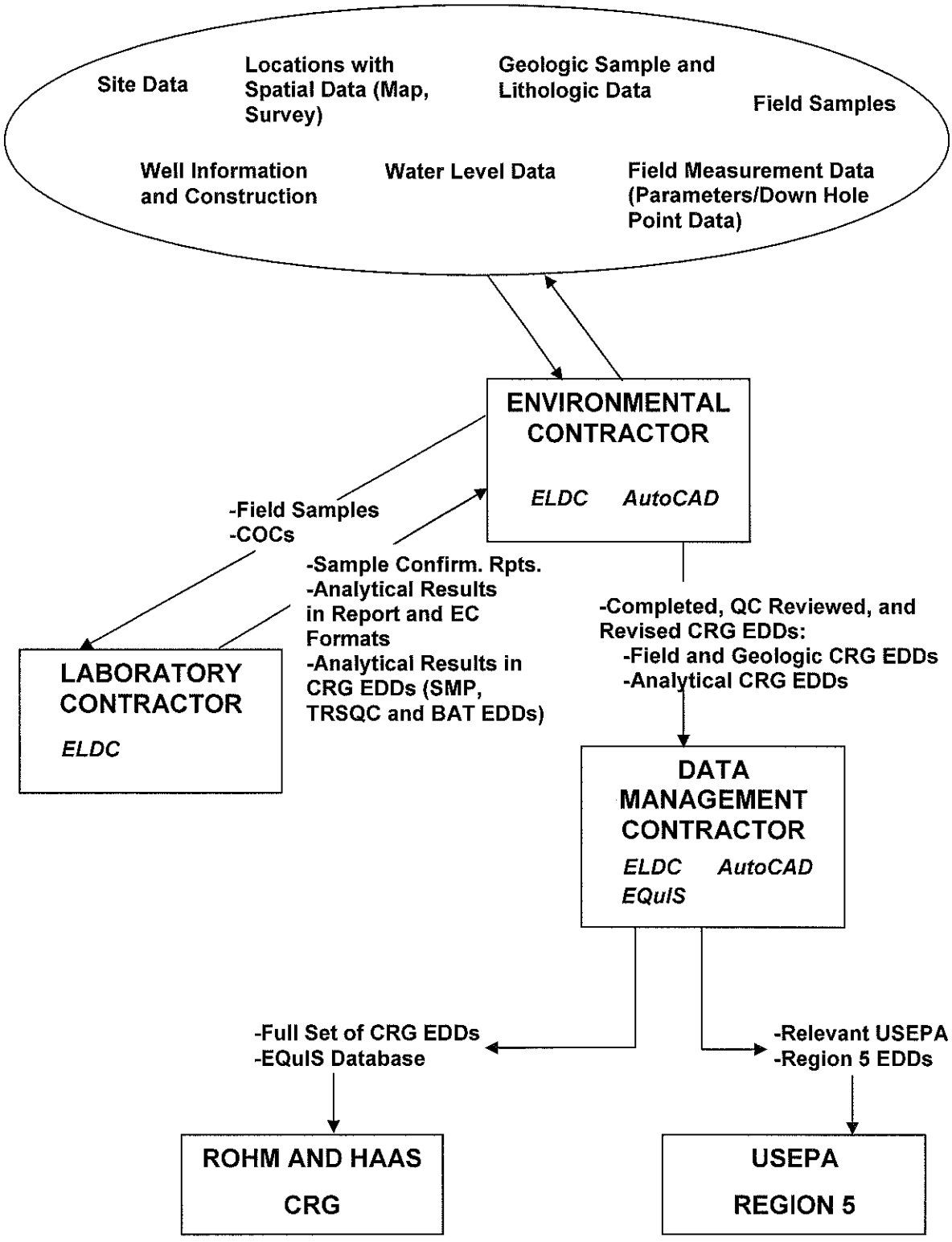
The functional responsibilities of the team are illustrated in Figure 2 and described below. All EDDs, both those prepared for Rohm and Haas' Corporate Remediation Group (CRG) and those prepared for EPAR5, will use the Comma-Separated Variable (CSV) ASCII-text file format.

2.1 Environmental Contractor Roles and Responsibilities

The EC is responsible for various aspects of the planning, execution, and reporting of investigation and sampling events. These responsibilities, in addition to those specified in the Quality Assurance Project Plan (QAPP) prepared by Geomatrix Consultants, Inc. (2000), include the following:

- Define a clear statement of event objectives.
- Prepare a Work Plan covering all details of the event.
- Check the Rohm and Haas CRG web site (hereafter referred to as the "CRG web site") at http://www.rohmhaas.com/crg and the EPAR5 web site at http://www.epa.gov/region5superfund/edman/ for up-to-date data requirements, valid reference value lists, Electronic Laboratory Data Checker (ELDC) format files, and guidance documents.
- Determine what measurements will be made in the field and what samples will be collected for analyses in approved laboratories.
- Propose sample codes for each sample to be taken using the Rohm and Haas CRG naming conventions available on the CRG web site. These sample codes may need to be updated after the event to reflect field changes.
- Set the data quality objectives (DQOs) and QC level appropriate for each measurement.
- Select the locations at which the investigation and/or sampling will take place.
- Secure or cause to be prepared an AutoCAD site map with appropriate coordinates on which each location that will be addressed during the event can be spatially represented. Provide this AutoCAD map to the DM and CRG. For the Cincinnati site, an AutoCAD site map has been generated and subsequently updated by Geomatrix Consultants, Inc. Therefore, a new site map is not necessary for this project.
- Oversee/carry out all geologic investigation work.
- Make certain that the EDDs for site data (CRG SITE) and location data (CRG LOC) are up to date. If new locations are created during the event, survey all new locations and reference points created during the event. Enter this data into the appropriate CRG EDDs. Check the EDDs using the ELDC available from Earthsoft, Inc. (use the current ELDC format files and valid reference values available on the CRG web site). Correct any errors found and send the EDDs to the DM.

FIGURE 2
Data Management Team Functional Responsibilities



Required software in ***italics***

- When conducting subsurface drilling (soil boring or other), record drilling specifications and collect geologic samples for lithologic observation and stratigraphic interpretation when required in the Work Plan; enter corresponding data into the EDDs for drilling activity data (CRG DRA), geologic sample data (CRG GSMP), and lithology data (CRG LTH). If water table observations (unstabilized/stabilized) are recorded in boreholes, enter these levels into the EDD for water table data (CRG TBL). Use CRG-approved codes in these EDDs. Check the EDDs with the ELDC. Correct any errors found and send the EDDs to the DM.
- When a well is installed, rebuilt, or resurveyed, enter the required data into the EDDs for well information (CRG WEL) and well construction (CRG WSG). Use CRG-approved terms to describe the well purpose, well datum, and well components. If appropriate, enter water table observations (unstabilized/stabilized) during and after well installation into the CRG TBL EDD and enter additional drilling activity data into the CRG DRA EDD. Check the EDDs with the ELDC. Correct any errors found and send the EDDs to the DM.
- When conducting a water level survey, enter all the required data into the EDD for water levels (CRG GWTR). Make certain to enter the elevation of the reference points. Check the EDDs with the ELDC. Correct any errors found and send the EDDs to the DM.
- Collect any other data required by the Work Plan and enter the data into the appropriate CRG EDDs. Check the CRG EDDs with the ELDC, correct any errors found, and send them to the DM.
- When samples are to be taken for analysis by an approved laboratory, EC responsibilities include:
  - Collaborate with the LAB during the Work Plan preparation and agree on suitable analytical methods that meet the DQOs.
  - Provide a copy of the Final Work Plan to the LAB prior to the sampling event.
  - Collaborate with the LAB on the number and type of containers needed for the sampling event.
  - Oversee/carry out the field sampling event.
  - Ensure that the required number of sample labels is present in the field at the time of sample collection; if appropriate, request the sample labels from the LAB. Ensure conformance to the bottle-labeling scheme described in the Rohm and Haas protocol for labeling field samples.
  - Prepare all chain-of-custody (COC) forms using the proper CRG sample code for each sample (except for field duplicates which are assigned blind codes). Create a unique identifier for each COC form if a pre-printed, lab-generated identifier is not already present on the form.
  - Arrange for timely transport of the samples to the LAB.

- Check the sample confirmation report as soon as it arrives from the lab and compare the sample codes to the COC and Work Plan. Inform Lab of any inconsistencies.
- Manage the blind sample codes used for field duplicate samples. QA/QC practices require that each field duplicate sample be identified with a blind sample code. This code must be cross-referenced to a proper CRG field duplicate sample code in the EC's field notebook.
- Receive from the LAB the analytical results in standard deliverable form, which includes hard copy reports (scanned version on CD-ROM) and electronic data in EC's designated formats. The EC's formats may be the same as the CRG EDD formats or may be different.
- Check the standard deliverables and CRG EDDs for completeness and notify the LAB of any discrepancies (errors, missing results, etc.). Compare reported results to the Work Plan, the COC forms, and the sample confirmation reports.
- Examine the data reported from the lab with respect to expected results and confer with the lab to resolve and confirm any results that seem inconsistent with expectations.
- Provide the data to a third-party validator in accordance with the requirements of the Work Plan and the QAPP (Geomatrix Consultants, Inc., 2000).
- Receive from the LAB the sample EDDs (CRG SMP) and enter the remaining field sample information. In addition, receive from the LAB the accompanying test/results EDD (CRG TRSQC) and analytical batch EDD (CRG BAT). Replace the blind sample codes with actual sample codes for field duplicates in all three CRG EDD files (SMP, TRSQC, and BAT).
- Check the sample codes in the CRG EDDs from the LAB to ensure that they are correct. If any discrepancies are found in the sample codes, make the corrections. Assure that a sample's code is spelled exactly the same way in each of the EDDs.
- Review third-party data validation reports and ensure that all validator qualifiers are added to the validator_qualifiers field in the CRG TRSQC EDDs.
- Check each completed CRG SMP EDD file, revised CRG TRSQC EDD file, and revised CRG BAT EDD file using the ELDC and correct any errors; re-check the corrected CRG EDD files to confirm error resolution, then forward the error-free CRG EDD files to the DM.

- Prepare all required reports.

2.2 Laboratory Contractor Roles and Responsibilities

The LAB is responsible for various aspects of sample custody, preparation, analysis, QA/QC, and reporting. These responsibilities, in addition to those specified in the QAPP (Geomatrix Consultants, Inc., 2000), include the following:

- Collaborate with the EC during the Work Plan preparation phase and agree on the appropriate analytical methods to be used.
- Review the Work Plan prior to the sampling event.
- Collaborate with the EC on the number and type of containers needed for the sampling event; prepare and deliver to the field the required sample containers and coolers.
- Provide the required number of sample labels as requested by the EC.
- Receive the samples from the field and check that the COC forms correctly cover all samples submitted.
- Log samples into the Laboratory Information Management System (LIMS) using information from the COC forms and the Work Plan.
- Prepare sample confirmation reports, one for each the sample delivery group and listing the following for each sample received: the sample delivery group number, the logged client sample identifier (i.e., proper CRG sample code or blind code), the assigned laboratory identifier, the sample date and time, the sample matrix, the requested tests, the date received in the lab, and the results due date. When possible, the report should also include the number of containers received, the acceptable holding time, and the holding time expiration date. Send copies of the confirmation report to the EC as soon as the all the samples from the event have been logged.
- Correct any mis-entered client sample codes in the LIMS as directed by the EC.
- Check the CRG web site at http://www.rohmhaas.com/crg for up-to-date data requirements, valid reference value lists, ELDC format files, and guidance documents.
- Assure that calibrations are current.
- Carry out the requested analyses and requested QC.
- Prepare the CRG SMP EDDs that contain all laboratory-generated information for both field and laboratory samples, as well as the field sample information abstracted from the COC forms at the time the samples were logged into the LIMS. Laboratory-generated QC samples that should be logged into the CRG SMP EDDs include method blanks, lab replicates, matrix spikes, matrix spike duplicates, blank spikes, blank spike duplicates, etc., but NOT calibration data. All relevant fields must be completed.
- Prepare and complete the CRG TRSQC and CRG BAT EDDs; include the container designations (container type codes) as the field container_id.
- Check the CRG SMP, CRG TRSQC, and CRG BAT EDDs using the ELDC (available from Earthsoft, Inc.; use with the current ELDC format files and valid reference values available on the CRG web site). Correct the CRG EDDs for any errors relevant to laboratory information or field information entered from the COC forms. ELDC errors resulting from missing information to be entered into the CRG SMP EDDs by the EC will be ignored.

- Send the corrected three-file sets of CRG EDDs, along with the ELDC error log files, to the EC, who will complete the CRG SMP EDDs.
- Respond to requests by the EC or the DM for additional or corrected information. If new EDDs are generated in order to respond to these requests, check them as described above.
- Prepare required reports/hard copy deliverables.

2.3 Data Management Contractor Roles and Responsibilities

The DM is responsible for various aspects of data management, database administration, and EDD production. These responsibilities include the following:

- Collaborate with Rohm and Haas to ensure that the CRG data import templates (i.e. EDD templates), valid reference value listings, and ELDC formats posted on the CRG web site are current and correct.
- Advise the EC and the LAB which of these data import templates, valid reference value files, and ELDC formats they should use to prepare, check, and submit data.
- Be fully knowledgeable with respect to EPAR5's requirements for electronic deliverables.
- Notify the EC and the LAB prior to the sampling event if they need to provide data not normally required for the CRG EDDs, but are required to satisfy certain EPAR5 requirements. Request that this data be included in the CRG EDDs when they are submitted, if possible.
- When the analytical work has been completed, receive from the EC the three-file sets of EDDs, comprised of the CRG SMP, CRG TRSQC, and CRG BAT, after the EC has completed the CRG SMP EDDs, corrected the erroneous sample codes among the corresponding EDD files, entered validation qualifiers into the CRG TRSQC EDDs, QC reviewed the EDD files using the ELDC, and corrected the EDD files for the errors identified by the ELDC.
- Review ELDC error log files received from EC for conformance with the required CRG EDD specifications and confirm that any EPAR5-specific data has been received.
- Perform EQuIS pre-load and load checks; resolve with the EC and the LAB any errors preventing loading into the EQuIS database system.
- Load and maintain the data in an EQuIS database system, ensuring database completeness, integrity, redundancy control, security, and backup.
- Create and provide EPAR5 with EQuIS-compliant EDDs in the format they specify. Oversee the resolution of any problems that make the electronic data set unacceptable to EPAR5.
- Provide Rohm and Haas with EQuIS-compliant EDDs in the Rohm and Haas format requested.

- Provide copies of the EQuIS databases to Rohm and Haas when requested.
- Communicate as needed with EPAR5 and Rohm and Haas regarding data deliverables and submission schedules.

3 Data Flow

3.1 Overview of Procedures

Data flow is "cradle-to-grave" processing of data from planning the event (development of a Work Plan or Sampling and Analysis Plan) to the receipt of the results by the end user. The data management procedures defined for the EC, the LAB, and the DM in Table 1 are specified in order to maintain the validity of all data from the time they are obtained until they become part of the EQuIS database system.

3.2 Project and Event Planning

For each investigation, the EC will determine the data collection requirements needed to meet project objectives and DQOs, as well as negotiate with the LAB on the analytical methods required to fulfill the objectives and determine the appropriate QC level, during the preparation of the Work Plan and in accordance with the QAPP (Geomatrix Consultants, Inc., 2000). **These data collection requirements must also take into account the requirements of both the Rohm and Haas CRG EDD and the EPAR5 EDD formats.**

To ascertain what data must be collected to meet Rohm and Haas CRG requirements, the EC must consult the two Microsoft (MS) Excel Workbooks maintained by Rohm and Haas on the CRG web site. One workbook contains EDD templates for geologic data and the other contains EDD templates for chemistry data. Each worksheet within these workbooks contains the template for one EDD in the form of two header rows. Each column represents a field in the EQuIS database and the header rows for each column are color-coded to indicate what the requirements are for providing data for that field. A separate worksheet in each workbook provides the key to the color coding and guidance on what fields require data entry. The EC must base the data collection requirements for each field event on the requirements of the relevant EDDs that correspond to the types of field activities being performed. A similar set of workbooks for EPAR5 EDDs can be found on the EPAR5 web site to ascertain EPAR5 requirements. Both the CRG and EPAR5 web sites should be checked prior to the preparation of any Work Plan or data collection activity to obtain an up-to-date set of EDD requirements (see Section 3.5.1).

As part of the planning for each sampling event, the EC will define the sample codes to be used in the Draft Work Plan. All sample codes will be assigned in accordance with the Rohm and Haas CRG sample naming conventions. The Draft Work Plan should contain sample codes for each field sample to be collected, including all field QC samples (field duplicates, field blanks, equipment blanks, etc.), trip blanks, and each sample volume collected for matrix spike and matrix spike duplicates. In the field, when the samples are labeled, blind sample codes will be inserted in place of the actual sample codes for all field duplicates to meet QA/QC requirements. The blind sample code and the corresponding proper CRG sample code will be recorded in the field logbook for each field duplicate sample. The date portion of the sample codes should be based on the proposed field work schedule.

Tasks fulfilled by the EC in preparation for each sampling event include, but are not limited to, preparing detailed project instructions that specify the Rohm and Haas sample codes defined in the Work Plan, locations, matrices, analyses to be requested, preservatives, number of containers, chemical field parameters to be measured, etc. The EC is responsible for ensuring that bottle labels are available in the field at the time of sampling. If more efficient, the EC may request pre-printed bottle labels from the LAB; to do so, the EC will need to send the sample information to the LAB in advance of the sampling event.

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Project and Event Planning			Work with Rohm and Haas to maintain up-to-date CRG EDD template, valid reference values, ELDC format files
	Download up-to-date EDD templates, valid reference values, ELDC format files, and guidance documents from Rohm and Haas CRG web site; review to ascertain data collection requirements (Section 3.2)		Advise the EC which CRG EDD templates, valid reference values, and guidance documents on the Rohm and Haas CRG web site they should use, as well as what additional data must be provided to meet EPAR5 EDD requirements (Sections 3.2 and 3.5.3.1)
	Prepare Work Plan with clear statement of event objectives, data quality objectives, data collection requirements (with input from DM), and QC level; include sample codes to be assigned based on Rohm and Haas sample naming convention and blind codes for field duplicates (Section 3.2)		
	Collaborate with LAB on analytical methods (Section 3.2)	Collaborate with EC on analytical methods (Section 3.2)	
			Create project FTP site and distribute access information (Section 3.5.2)
	Provide Work Plan to LAB (Section 3.2)	Review Work Plan from EC (Section 3.2)	
		Download up-to-date EDD templates, valid reference values, ELDC format files, and guidance documents from Rohm and Haas CRG web site; review to ascertain analytical EDD requirements (Section 3.2)	Advise the LAB which CRG EDD templates, valid reference values, and guidance documents on the Rohm and Haas CRG web site they should use (Sections 3.2 and 3.5.4.1)

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Project and Event Planning (cont.)	Prepare detailed field instructions (Section 3.2)	Prepare and deliver sample containers, sample labels, and coolers to the field (Section 3.2)	
	Create bottle labels (Section 3.2.2; this task may be delegated to the lab if more efficient: provide label info)		
Event Data Collection	Collect and log field samples, normal and QC (Section 3.3.1)		
	Collect field, geologic, and other data (Section 3.3.2)		
	Obtain data collected by subcontractors (Section 3.3.2)		
Sample Tracking	Package samples and prepare chain-of-custody (COC) forms (1 per cooler); ship to LAB (Sections 3.4.1 and 3.4.2)	Receive samples from EC and check against COC forms; log samples and requested analyses into the LIMS (Section 3.4.3)	
	Receive and review sample confirmation reports from LAB; QC client sample codes, analyses requested, etc. (Section 3.4.4.2)	Prepare sample confirmation reports and send to EC (Section 3.4.4.1)	
	Communicate errors identified from sample confirmation reports to LAB (Section 3.4.4.2)	Correct errors in sample data in the LIMS identified by EC (from sample confirmation reports) (Section 3.4.4.2)	
		Perform requested analyses (Section 3.4.5)	
Data Entry and Transfer	Check Rohm and Haas CRG web site for updated versions of the EDD templates, valid reference values, ELDC format files, and guidance documents prior to data entry; review for changes (Section 3.5.3.1)	Check Rohm and Haas CRG web site for updated versions of the EDD templates, valid reference values, ELDC format files, and guidance documents prior to EDD generation; review for changes (Section 3.5.4.1)	
		Prepare the standard deliverables and analytical CRG EDDs for EC (Section 3.5.4.1)	
		QC and correct analytical CRG EDDs using ELDC and Rohm and Haas formats/valid values (Section 3.5.4.2)	

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Data Entry and Transfer (cont.)	Receive standard deliverables and CRG EDDs from LAB; check that they meet expectations; check for completeness (Sections 3.4.6 and 3.5.4.3)	Send standard laboratory deliverables and CRG EDDs to EC within specified turn-around time (Sections 3.4.5 and 3.5.4.2)	
	Communicate errors in standard deliverables and CRG EDDs to LAB for revision (Sections 3.4.6 and 3.5.4.3)	Correct the errors identified in the standard deliverables and CRG EDDs by the EC; regenerate corrected deliverables as needed; recheck CRG EDDs with ELDC (Section 3.5.4.4)	
	Receive corrected standard deliverables and CRG EDDs from LAB; check for completeness and ensure corrections were made (Section 3.5.4.4)	Send corrected standard deliverables and CRG EDDs to EC (Section 3.5.4.4)	
	Complete CRG SMP EDDs, by entering remaining field sample information, replacing blind sample codes with actual sample codes, and adding additional EPAR5 data under direction of DM; check for discrepancies in sample codes between files and make corrections (Section 3.5.4.5)		
	Submit (corrected) laboratory deliverables to data validator (Section 3.5.4.6) Receive data validation report from data validator and review; ensure validator qualifiers are incorporated into CRG TRSQC EDDs in validator_qualifiers field (Sections 3.5.4.6)		
	QC completed/revised analytical CRG EDDs using ELDC and the corresponding formats/reference values posted on the CRG web site, make corrections, re-check the EDDs using ELDC to confirm error resolution, and send error-free EDDs and ELDC logs to DM (Sections 3.5.3.2 and 3.5.4.7) Sent blind sample key to DM (Section 3.5.4.8)		Receive analytical CRG EDDs with applicable EPAR5 data from EC Receive blind sample key from EC

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Data Entry and Transfer (cont.)	Prepare all relevant field and geologic CRG EDDs and include additional EPAR5 data as directed by DM (Section 3.5.3.1)		
	QC field and geologic CRG EDDs using ELDC and the corresponding formats/reference values posted on the CRG web site, make corrections, re-check EDDs using ELDC to confirm error resolution, and send error-free EDDs and ELDC log files to DM (Section 3.5.3.2)		Receive field and geologic CRG EDDs with applicable EPAR5 data from EC
	Send site map to DM (Section 3.5.3.3)		Receive site map from EC
Data Loading			Check CRG EDDs received from EC for conformance to required specifications by reviewing ELDC error log files; use site map to check location coordinates (Section 3.6.1)
	Work with DM and LAB to resolve analytical CRG EDD non-conformance issues (Section 3.6.1)	Work with DM and EC to resolve non-analytical CRG EDD non-conformance issues (Section 3.6.1)	Communicate with EC and LAB to resolve non-conformance issues in analytical CRG EDDs; request corrected CRG EDDs from the EC and/or LAB as needed (Section 3.6.1)
	Work with DM to resolve field and geologic CRG EDD and EPAR5 non-conformance issues (Section 3.6.1)		Communicate with EC to resolve errors and non-conformance issues in field and geologic CRG EDDs and EPAR5 data; request corrected CRG EDDs from the EC as needed (Section 3.6.1)
			Load all CRG EDDs into the EQuIS database system (Section 3.6.2)
	Receive post-load reports from DM and QC for completeness (Section 3.6.3)		Generate post-load reports and send to EC for review (Section 3.6.3)
	Communicate errors or missing results/data to the DM and the LAB; work with LAB to resolve errors or provide missing data; (Section 3.6.3)	Work with EC and DM to resolve errors or missing results (Section 3.6.3)	Advise the EC and LAB as needed during error resolution; load correction/update CRD EDDs (Section 3.6.3)
			Provide Rohm and Haas with final CRG EDDs (Section 3.7.1)

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Data Deliverables			Generate EPAR5 EDDs and QC with EPAR5 EDP (Section 3.7.2.1)
	Work with DM to resolve any outstanding errors or data conflicts in the CRG EDDs or EPAR5 EDDs (Section 3.7.2.1)	Work with DM to resolve any outstanding errors or data conflicts in the CRG EDDs or EPAR5 EDDs (Section 3.7.2.1)	Resolve any outstanding errors or data conflicts in the CRG EDDs or EPAR5 EDDs, with assistance from EC, LAB, and Rohm and Haas as needed (Section 3.7.2.1)
			Send EPAR5 submission to Rohm and Haas for review and revise as needed (Section 3.7.2.1)
			Send EPAR5 submission to USEPA (Section 3.7.2.2)
			Address USEPA comments on EPAR5 EDDs, consulting Rohm and Haas, the EC, and the LAB as needed (Section 3.7.2.3)
			Provide copies of EQuIS databases to Rohm and Haas upon request (Section 3.7.1.4)

Preparations by the EC must also include specifying requirements and mechanisms for recording or obtaining spatial information from surveyors (coordinate system, datums, accuracy, etc.), drilling information, logging details relative to geologic samples and lithologic observations from boreholes, well installation information, water level survey data, down-hole survey data (e.g., borehole geophysics), etc.

The LAB will collaborate with the EC on the selected analytical methods during the Work Plan phase and will review the Work Plan (provided by the EC) prior to the sampling event. The CRG web site should be checked upon review of the Work Plan to obtain an up-to-date set of EDD requirements.

The LAB will also prepare and deliver to the field the requested sample containers, sample labels (as requested by the EC, either blank or pre-printed), and coolers. If requested by the EC, the bottle labels will be prepared by the LAB in advance of field collection using sample information sent by the EC.

The DM will consult as needed with the EC and the LAB regarding the CRG and EPAR5 EDD requirements and their impact on data collection and EDD generation.

3.2.1 Rohm and Haas Sample Naming Convention

All field samples, trip blanks, and field-collected sample volumes for matrix spike and matrix spike duplicate analyses will be given sample codes according to the Rohm and Haas CRG sample naming convention that will be incorporated as a modification to the current QAPP (Geomatrix Consultants, Inc., 2000). The sample naming convention can be found in *CRG Naming Conventions* on the CRG web site.

3.2.2 Bottle Labeling

Bottle labels will be prepared in accordance with the Rohm and Haas CRG specifications listed in the *Protocol for Labeling Field Samples* found on the CRG web site.

3.3 Event Data Collection

The EC will conduct the field event according to the detailed instructions prepared during the planning phase. In addition to specifications outlined in the Work Plan and the QAPP (Geomatrix Consultants, Inc., 2000), data collection, field logging, and COC paperwork will be completed following the standards and instructions provided in this section.

3.3.1 Sample Collection and Logging

Samples will be collected by the EC following procedures outlined in the Work Plan, QAPP (Geomatrix Consultants, Inc., 2000), and the project instructions. The EC field team will record sampling data during sample collection in the field logbooks, which includes, but is not limited to, the following:

- Location name
- Sample code (actual sample code and blind sample code both, if appropriate)
- Sample date and time
- Sample matrix and type
- Sample depths (starting and ending)
- Number of containers per analysis

Changes, additions, or deletions to the sampling information are to be noted in the field logbooks. All field parameters measured during sample collections, such as pH, turbidity, dissolved oxygen, and temperature, are also to be recorded in the field logbooks.

3.3.2 Geologic, Well Construction, and Other Data Collection

The EC (or designated subcontractor) will record in the field logbooks or appropriate data storage devices the data needed to meet the requirements of the Rohm and Haas CRG and the EPAR5 EDDs. Some of the required data and fields are listed below in Table 2.

TABLE 2
Select Data and Fields Required for Geologic, Well Construction, and Other Data Collection

Data/Field	Data/Field	Data/Field
location name	location type	survey data
total depth	drilling specifications	geologic sample data
lithologic descriptions	total well depth	well stickup
boring/drilling dates	well installation dates	well construction
water level data	borehole geophysics	water table (during soil boring or well installation)

For survey data, the required information given in Table 3 must be obtained from the surveying subcontractor or recorded by the EC if directly using global positioning system (GPS) equipment:

TABLE 3
Required Survey Information

Data/Field	Data/Field
coordinate collection method	benchmarks
coordinate system	horizontal datum
XY coordinates	coordinate units
coordinate accuracy (+/-value)	coordinate accuracy units
elevation collection method	vertical datum
surface elevation (ground or other)	top of casing elevation
elevation units	elevation accuracy (+/-value)
elevation accuracy unit	

For borehole geophysical data, it is recommended that such data be collected in a digital format conducive to the down hole point data EDD (CRG DHP) specifications.

3.4 Sample Tracking

The EC and the LAB will incorporate the following procedures as part of the sample tracking process, in addition to those defined in the Work Plan and the QAPP (Geomatrix Consultants, Inc., 2000).

3.4.1 Sample Packaging and Shipment

The EC will package samples for shipment to the laboratory according to the procedures specified in the Work Plan and the QAPP (Geomatrix Consultants, Inc., 2000). Each cooler of samples will be shipped with an individual COC form. Each cooler will be labeled with a

unique identifier. See the CRG web site for a suggested format for this identifier. All bottles pertaining to an individual sample must be packaged in the same cooler as much as possible. The EC will be responsible for filling out the COC forms and shipping the samples. The EC should cooperatively work with the laboratory to ensure analyses are completed as required and that discrepancies between the COC forms and the samples are resolved.

3.4.2 Chain-of-Custody Forms

A COC form must accompany each shipment of samples through the sampling, laboratory analysis, data validation and data storage processes. The form will ultimately become part of the project file. The COC form will be used to verify the accuracy and completeness of sample results received from the laboratories. It will also be the source of information to verify laboratory invoices and approve them for payment.

COC forms must contain information consistent with the sample bottle labels. The COC forms must travel with the sample containers to the laboratory to verify samples taken, analyses requested, shipping dates, and receipt by the laboratory.

Each COC form must be signed by the EC sampler to indicate who is responsible for the sampling and field information on the form. Changes to a COC form must be written and initialed on the form. Changes to the COC form should not be made after shipping because of the potential for miscommunication that can occur between the field and the laboratory, and the likelihood that the change will not get recorded on the copy transmitted to the laboratory.

3.4.2.1 COC Form Elements

Each COC form will also include the elements listed below in Table 4:

TABLE 4
Required Elements for Chain-of-Custody Forms

Element	Element	Element
project number	project name	sampling team
COC identifier	location names	sample codes
sample depths	sampling dates	sampling times
sample matrices	total no. of containers	remarks
requested anal. Methods	shipping information	name of laboratory
relinquished/received signatures with dates and times	cooler identifier*	

* See CRG web site for suggested format.

See Appendix A for an example of a completed COC form. Rohm and Haas reference sample matrix codes will be used to indicate all sample matrices recorded on COC forms (see the valid reference value list on the CRG web site for a complete list of sample matrix codes). Commonly used sample matrix codes are as follows:

SO	Soil
SE	Sediment
WG	Groundwater
WS	Surface water
WH	Equipment rinsate blank
RW	Rinse water (rinse water before washing equipment)
WQ	Trip blank

3.4.2.2 COC Form Identifiers

The EC must ensure that each COC form has a COC identifier, which must appear in the upper right-hand corner of the form or in the appropriate space on the form, if available (see Appendix A for examples). The identifier may be either a pre-printed, laboratory-assigned code or an identifier assigned by the EC. All identifiers assigned by the EC must conform to Rohm and Haas naming conventions maintained on the CRG web site *(CRG Naming Conventions*).

3.4.3 Laboratory Sample Receipt and Logging

Upon receipt of the samples from the field, the LAB will check that the COC forms correctly cover all samples submitted. Each COC form must be signed with the date and time of receipt by the LAB. Samples will be logged into the LIMS using information from the COC forms and the Work Plan. The LAB will generate unique laboratory sample codes using the sample naming conventions defined by Rohm and Haas in the document *CRG Naming Conventions* listed on the CRG web site.

Questions or noted inconsistencies identified by the LAB should be addressed to the EC for resolution. The EC must follow up verbal questions with written confirmation.

3.4.4 Sample Confirmation Reports

3.4.4.1 Sample Confirmation Report Preparation

The LAB must acknowledge sample receipt in writing to the EC in the form of sample confirmation reports. Each report must include the laboratory's assigned batch identifier, or sample delivery group number, and list for each sample received: the logged client sample identifier (i.e. proper CRG sample code or blind code), the assigned laboratory identifier, the sample date and time, the sample matrix, the requested tests, the date received in the lab, and the results due date. When possible, the report should also include the number of containers received, the acceptable holding time, and the holding time expiration date. In addition, each COC form must be included with the laboratory-assigned sample numbers entered for each sample along with comments about any exceptions (e.g., missing or damaged containers).

3.4.4.2 Review of Sample Confirmation Reports and Data Correction

The EC will review the sample confirmation reports and identify any errors in client sample codes, requested analyses, etc., logged into the LIMS by the LAB. The EC will then communicate these errors to the LAB, and the LAB will make the necessary corrections in the LIMS.

3.4.5 Laboratory Analysis

The LAB will assure that all calibrations are current, then carry out the requested analyses and requested QC. Samples will be analyzed as specified on the accompanying COC forms and in the contract instructions.

Upon completion of the analyses, the laboratory results will be sent to the EC within the contract-specified time period in the standard deliverable form specified in the QAPP (Geomatrix Consultants, Inc., 2000). The LAB will also send to the EC the three-file sets of CRG EDDs requested by Rohm and Haas (see Section 3.5.4).

3.4.6 Verification of Return of Complete Sample Data Sets

The EC will monitor the expected return dates of the sample data sets from the laboratories. Sample data sets that appear to be late will be noted and the LAB will be contacted by the EC for information on the progress of the analyses and expected arrival of the deliverables.

As data are received from the LAB, the EC will reconcile the standard data deliverables with sample tracking information or COC forms to check that all data sets have been received within the specified turn-around time and are complete. This includes checking the three-file sets of CRG EDDs against the COC forms to ensure their completeness. Exceptions in the data sets will be noted and resolved with the LAB, such as delayed, missing, mismatched, and invalid sample codes and analyses. The EC will also examine the data and resolve with the lab any values that do not appear to meet expectations.

Prior to transfer to the DM, the EC will need to complete and QC review the CRG SMP EDDs received from the LAB (see Section 3.5.4.5).

The EC must notify Rohm and Haas when delays or problems with data quality are encountered.

3.5 Entry and Transfer of Field, Geologic, and Analytical Data

This section describes the process used by the EC and the LAB to transfer field log information and laboratory sampling results into CRG EDDs that can be entered into the EQuIS database system.

3.5.1 Web Site Data Management Reference Material

All CRG data management reference material will be maintained solely by Rohm and Haas on the CRG web site at http://www.rohmhaas.com/crg. This reference material includes the CRG EDD templates listed in Table 5 (MS Excel Workbooks), the CRG valid reference value list (MS Excel file), the ELDC format files, *CRG Naming Conventions* (crg-026a.pdf), and *Protocol for Labeling Field Samples* (crg-026.pdf). Future guidance documents and updates will be posted to the CRG web site by Rohm and Haas as they are available. The DM will periodically check that the data management reference materials available on the CRG web site are correct and up-to-date. The DM will notify Rohm and Haas of outdated or incorrect materials posted on the web site. As appropriate, the DM will also provide Rohm and Haas with additional documents and guidance for approval and posting on the web site. **Please note that all materials on the CRG web site, including the CRG EDD**

templates, are "living documents" that will evolve with time as changes arise. The CRG web site should be visited regularly to obtain up-to-date versions of various files.

The EC must obtain and review up-to-date CRG EDD templates, reference values, and ELDC format files from the CRG web site prior to the preparation of any Work Plan or data collection activity (see also Section 3.2), and prior to CRG EDD preparation. The LAB must also obtain and review up-to-date CRG EDD templates, reference values, and ELDC format files from the CRG web site upon review of each Work Plan provided by the EC to ascertain current CRG EDD requirements. **The EC and the LAB must refer to and use these templates, reference values, and ELDC format files in generating the CRG EDDs.** The EC should also consult the EPAR5 web site to ascertain any data requirements to be met in addition to those specified for the CRG EDDs. The DM will be available to advise the EC and the LAB on data entry and generation of the CRG EDDs, as well as the EPAR5 data requirements.

TABLE 5
Rohm and Haas CRG EDDs

EDD Format Name	Description
CRG SITE	CRG Site Import
CRG LOC	CRG Location Import
CRG DRA	CRG Drill Activity Import
CRG GSMP	CRG Geologic Sample Import
CRG LTH	CRG Lithology Import
CRG WEL	CRG Well Import
CRG WSG	CRG Well Construction Import
CRG DHP	CRG Down Hole Point Import
CRG GWTR	CRG Water Level Import
CRG TBL	CRG Water Table Import
CRG SMP	**CRG Sample Import**
CRG TRS	CRG Test/Result Import without QC
CRG TRSQC	**CRG Test/Result Import with QC**
CRG BAT	**CRG Batch Import**
CRG CFM	CRG Field Measurement Import

EDD format names in bold are to be used for reporting of laboratory analytical data

3.5.2 DM Project File Transfer Protocol (FTP) Site

The DM will make available and manage a project FTP site for the transfer of electronic documents and data files. All contractors may post electronic files to the FTP site for retrieval by others, including analytical CRG EDDs prepared by the LAB, analytical CRG EDDs completed and revised by the EC, field/geological CRG EDDs prepared by the EC, EPAR5 EDDs prepared by the DM for review by Rohm and Haas, and copies of the EQuIS Chemistry and Geology databases. **An e-mail must be sent notifying the recipient that the files have been posted to the FTP site.** Instances of formal delivery on CD-ROM as specified will still be required.

3.5.3 Field and Geologic Data

3.5.3.1 Data Entry

The EC will use CRG EDD templates and valid reference values for data entry of field sample (see Section 3.5.4.5), chemical field measurement, site, location, drilling, geologic sample, lithology, well, well construction, down hole point, groundwater level, and water table data. The CRG web site should be checked for updated versions of templates and valid reference value lists prior to data entry. The templates are available from the CRG web site in MS Excel file format. If another format is requested, the EC should contact the DM directly. **The EC must also provide any additional data required to fulfill EPAR5 EDD requirements.**

Before any data entry is begun, the EC must become familiar with the EDD field requirements and usage. Questions regarding data entry or the CRG EDD templates should be directed to the DM.

CRG Chemical Field Measurement (CFM) EDD Preparation

The EC will use the CRG CFM EDD template for data entry of chemical parameters measured in the field, such as water temperature, pH, oxidation-reduction potential, dissolved oxygen, conductivity, etc. As relevant, a CFM EDD should be prepared for each field event. Each CFM EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG SITE EDD Preparation

The EC will use the CRG SITE EDD template for data entry of site information including the site code, site name, site description, contact name, site address, contact phone, and contact e-mail address. An initial SITE EDD need only be prepared once and sent to the DM for each facility. The SITE EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Location (LOC) EDD Preparation

The EC will use the CRG LOC EDD template for data entry of location information, including location name, location type, location description, total depth, coordinates, coordinate system specifications, benchmarks, coordinate accuracy, ground surface elevation, and elevation specifications and accuracy. An initial LOC EDD with records for all existing locations should be prepared once and sent to the DM. Subsequent LOC EDDs should only contain records for new locations. The LOC EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Drilling Activity (DRA) EDD Preparation

The EC will use the CRG DRA EDD template for data entry of drilling and abandonment events relative to drill holes and wells. This includes starting and ending drilling depths, drill-hole diameter, drilling fluid, hammer weight and fall, and hammer lift mechanism. As relevant, a DRA EDD should be prepared for each field event. In addition to records for new drill holes/wells, the DRA EDDs may also contain additional drilling-related events for

existing drill holes/wells. Each DRA EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Geologic Sample (GSMP) EDD Preparation

The EC will use the CRG GSMP EDD template for data entry of geologic samples collected for geotechnical testing. This includes geologic sample codes, geologic sample starting and ending depths, sample date, sample time, sampling method, lithologic material type, liquid limit, plastic limit, shrinkage limit, flow index, plasticity index, void ratio, etc. As relevant, a GSMP EDD should be prepared for each field event. Each GSMP EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Lithology (LTH) EDD Preparation

The EC will use the CRG LTH EDD template for data entry of lithologic observations made during the logging of drill holes. This includes interval starting depth, lithologic material type, geologic unit code, moisture, permeability, consolidation, color, consistency, sorting, grain size, and odor. As relevant, a LTH EDD should be prepared for each field event. Each LTH EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Well (WEL) EDD Preparation

The EC will use the CRG WEL EDD template for data entry of well information, including well name (should be same as location name), well description, well purpose, well status, total well depth, stickup, top of casing elevation, datum elevation (measurement point), datum elevation collection method, installation date, pump information (if applicable), and head configuration. An initial WEL EDD with records for all existing wells should be prepared once and sent to the DM. Subsequent WEL EDDs should only contain records for new wells. The WEL EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Well Construction (WSG) EDD Preparation

The EC will use the CRG WSG EDD template for data entry of well construction information. For each well segment, the segment type, material type, starting and ending depths, inner and outer diameters, and thickness are entered into the template. As appropriate, the slot type, slot size, screen type, and material quantity are also entered. An initial WSG EDD with records for all existing wells should be prepared once and sent to the DM. Subsequent WSG EDDs should only contain records for new wells. The WSG EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Down Hole Point (DHP) EDD Preparation

The EC will use the CRG DHP EDD template for data entry of down hole point measurements such as blow counts, recovery, photo ionization detector (PID) readings, flame ionization detector (FID) readings, pore pressure, resistivity, conductivity, gamma, caliper, and tip stress, etc. As relevant, one or more DHP EDDs should be prepared for each field event. Due to the large number of geophysical measurements collected over the length

of the drill hole, it is highly recommended that the measurements be collected digitally for download to files that can be manipulated into conformance with the DHP EDD structure. Each DHP EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Groundwater Level (GWTR) EDD Preparation

The EC will use the CRG GWTR EDD template for data entry of groundwater level measurements in wells and for surface water bodies. This includes measurement date, measurement time, depth to water level, water elevation, corrected depth to water level (if product is present), corrected elevation, and measured well depth. As relevant, a GWTR EDD should be prepared for each field event. Each GWTR EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Water Table (TBL) EDD Preparation

The EC will use the CRG TBL EDD template for data entry of water table information collected during drilling and well installation. This includes depth to water table, nature of water table measurement (unstabilized/stabilized), measurement method, reference point elevation, and aquifer. An initial TBL EDD with records for all existing drill holes and wells should be prepared once and sent to the DM. Subsequent TBL EDDs should only contain records for new drill holes and wells. The TBL EDD can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

Additional Data for USEPA Region 5 EDDs - Preparation

The EC will provide to the DM any information that is required by EPAR5 that is in addition to the data required by the CRG EDDs. The additional data can be added to the CRG EDDs or, if no available field exists in the CRG EDDs, it can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format.

3.5.3.2 Field and Geologic Data QC and Transfer

The EC will QC all prepared CRG EDDs and additional EPAR5 data relevant to the field event using the ELDC in conjunction with Rohm and Haas CRG format files and valid reference values. The EC will correct errors found, then re-check the CRG EDD files using the ELDC to confirm error resolution. The EC will then forward these error-free CRG EDDs, EPAR5 data, and ELDC error log files to the DM for data loading. As previously indicated, the CRG EDDs and EPAR5 data can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

3.5.3.3 Site Map Transfer

The EC will provide the DM (via the FTP site or e-mail) with an electronic site map showing all locations (soil sampling locations, surface water and sediment locations, monitoring wells and temporary wells, etc.). This map must be in the coordinate system in which survey results are reported or utilized. The site map must be supplied in either an AutoCAD Release 14, or an earlier version, digital exchange format file (DXF extension) or drawing format file (DWG extension). For the Cincinnati site, an AutoCAD site map has

been generated and subsequently updated by Geomatrix Consultants, Inc. Therefore, the creation of a new site map is not necessary for this project. However, the EC should update the site map and supply it to the DM as new locations are added.

3.5.3.4 Data Correction/Updates

Data corrections or updates identified by the EC after the CRG EDDs and additional EPAR5 data have been sent to the DM and loaded into the EQuIS database system will be made using update CRG EDDs (and EPAR5 data files if directed by the DM). The EC will use the CRG EDD templates to create files that contain only those records for which there are corrections or updates. In addition, each record in the update EDD will have only the required "key" fields (for loading) and the corrected or updated fields populated. The remaining fields will be left null (empty).

Once prepared, the EC will QC the update EDDs using the ELDC. Prior to checking the update EDDs with ELDC for the first time, the EC should contact the DM for guidance on the handling of specific error messages that are expected during execution. Of primary importance is the "Required field cannot be null" error, which will be triggered by null (empty) required fields in the update EDDs. If the required fields in question are null because no correction or update was needed, and the correct data for those fields has been submitted previously to the DM, there is no real error in this instance and these particular ELDC error messages should be ignored. After correcting the pertinent errors identified by the ELDC, the EC will send the update EDDs to the DM (via the FTP site or e-mail). The update files can be transferred to the DM in MS Excel, MS Access, or CSV ASCII-text file format.

3.5.4 Laboratory Analytical Data

3.5.4.1 Data Entry

The LAB and the EC will use CRG EDD templates and valid reference values for the preparation of field sample, laboratory sample, test, result, QC result, and laboratory batch data. These templates are available from the CRG web site in MS Excel file format. If another format is requested, the LAB and the EC should contact the DM directly. **The LAB and the EC must also provide any additional data required to fulfill EPAR5 EDD requirements.**

Before any data entry is begun, the LAB and the EC must become familiar with the EDD field requirements and usage. Questions regarding data entry or the CRG EDD templates should be directed to the DM.

CRG SMP EDD Preparation

The LAB will create CRG SMP EDDs using the associated template for the mapping of laboratory-generated information for both field and laboratory samples from the LIMS to the EDD structure. The LAB will also enter into the CRG SMP EDDs the field sample information abstracted from the COC forms at the time of sample login. Laboratory-generated QC samples that should be logged into the CRG SMP EDDs include method blanks, lab replicates, matrix spikes, matrix spike duplicates, blank spikes, blank spike duplicates, etc., but NOT calibration data. Each SMP EDD will be saved/exported as a CSV ASCII-text file with double quotes enclosing all text values. The LAB will send the CRG

SMP EDDs to the EC for completion, along with the corresponding CRG TRSQC and CRG BAT EDDs.

The EC will be responsible for completing the CRG SMP EDDs received from the LAB by checking/correcting the sample codes and entering the remaining field sample information from field logbooks and COC forms. The EC will also replace the blind sample codes with actual sample codes for field duplicates in the CRG SMP EDD, as well as the CRG TRSQC and CRG BAT EDDs (see Section 3.5.4.5). It is recommended that either MS Excel or MS Access be used to complete the CRG SMP EDD data, which can remain in either format or be exported to CSV ASCII-text file(s) for transfer to the DM.

CRG Test/Results with QC Data (TRSQC) EDD Preparation

The LAB will use the CRG TRSQC EDD template for the mapping of analytical test method names, measured results, and QC data from the LIMS to the EDD structure. This includes entering the container designations (container type codes) into the field container_id. Each CRG TRSQC EDD must contain only those results for samples listed in the corresponding CRG SMP EDD. Each TRSQC EDD will be saved/exported as a CSV ASCII-text file with double quotes enclosing all text values.

CRG Batch (BAT) EDD Preparation

The LAB will use the CRG BAT EDD template for the mapping of analytical test batch data from the LIMS to the EDD structure. Each CRG BAT EDD must contain records for each sample and corresponding analytical method and test type for which results are reported in the corresponding CRG TRSQC EDD; please note that the analysis dates and times given in the CRG BAT EDD must match those in the corresponding CRG TRSQC EDD. In addition, all samples in the CRG BAT EDD must appear in the corresponding CRG SMP EDD. Each BAT EDD will be saved/exported as a CSV ASCII-text file with double quotes enclosing all text values.

3.5.4.2 Analytical Data QC by LAB and Transfer

In addition to conducting standard QC practices for all laboratory deliverables, the LAB will QC all three-file sets of CRG EDDs using the ELDC in conjunction with the Rohm and Haas format files and reference values. Any errors in the EDDs identified by the ELDC must be corrected by the LAB prior to shipment to the EC. The EDDs will be provided on CD-ROM in CSV ASCII-text file format with double quotes enclosing all text values.

3.5.4.3 Data Check-in and QC

Upon receipt from the LAB, the EC will check the standard deliverables and CRG EDDs for completeness against sample tracking information and project instructions. This includes logging the receipt date and assigned document control numbers, and physically checking for missing information or inconsistencies. The EC will examine the data reported from the lab with respect to expected results, and confer with the lab to resolve and confirm any results that seem inconsistent with expectations. The QC data will also be reviewed for data quality issues.

Errors (mismatched records, missing results, invalid results, etc.) identified by the EC will be communicated to the LAB for report revision and EDD regeneration (EC or CRG format as needed).

3.5.4.4 Data Correction by LAB

The LAB will make corrections to the standard deliverable and the three-file sets of CRG EDDs for errors (mismatched records, missing results, invalid results, etc.) identified by the EC upon check-in and QC. Once corrections have been made, the standard deliverables and/or the CRG EDDs will be regenerated. The regenerated CRG EDDs will be checked by the LAB using the ELDC; any identified errors will be corrected prior to sending them to the EC. Upon receipt, the EC will check the regenerated standard deliverables and CRG EDDs for completeness and to confirm that the requested corrections have been made.

3.5.4.5 SMP Completion and Sample Code QC

The EC will complete the CRG SMP EDDs received from the LAB by entering the remaining field sample information and replacing the blind sample codes with actual sample codes for the field duplicates. The EC will also replace the blind sample codes in the CRG TRSQC and CRG BAT EDDs. The EC will check the sample codes in each of the EDDs (CRG SMP, CRG TRSQC, and CRG BAT) received from the LAB to ensure that they are correct. If any discrepancies are found in the sample codes, the EC will make the corrections and ensure that a particular sample's code is spelled exactly the same way in each of the three corresponding EDD files. If applicable, additional data needed to fulfill EPAR5 EDD requirements should be entered into the CRG SMP EDDs under the direction of the DM.

3.5.4.6 Data Validation and Validator Qualifier Entry

The EC will oversee the data validation as specified in the QAPP (Geomatrix Consultants, Inc., 2000) once the LAB deliverables are confirmed to be complete and error-free. After receiving and reviewing the data validation reports, the EC will enter the validator qualifiers into the field validator_qualifiers within the corresponding CRG TRSQC EDDs.

3.5.4.7 Revised CRG EDD QC by EC and Transfer

The EC will QC review the completed/revised CRG EDD files using the ELDC once the CRG SMP EDDs have been completed, the erroneous sample codes have been corrected in each CRG EDD (SMP, TRSQC, and BAT), and the validator qualifiers have been entered. The EC will correct any errors found, then re-check the CRG EDD files using the ELDC to confirm error resolution. The EC will then forward these error-free CRG EDDs and ELDC error log files to the DM.

3.5.4.8 Blind Sample Key Transfer

The EC will prepare a blind sample key for the sampling event that cross-references the blind sample codes with the proper CRG field duplicate sample codes. **The EC will then forward BY E-MAIL ONLY a copy of this key to the DM at the conclusion of the sampling event.**

3.6 Data Loading

3.6.1 Pre-Load Procedures and Data QC

The DM will check all CRG EDDs received from the EC for conformance with the required EDD specifications and database integrity by reviewing the corresponding ELDC error log files (also provided by the EC). The DM will advise the EC and the LAB on correcting the EDDs for any remaining errors noted in the ELDC log files. As needed, the DM will request that the EC correct and resubmit the CRG EDDs.

In addition, the DM will use the electronic site map provided by the EC to check that coordinates provided for locations listed in the CRG LOC EDD represent the positions plotted on the site map.

3.6.2 Data Loading

When all QC checks are completed with no apparent errors, the DM will upload the CRG EDD data into the EQuIS database system. Any errors identified during loading will be resolved with the assistance of the EC and the LAB, which may include having the EC correct and resubmit the CRG EDDs to the DM. The additional EPAR5 data will be stored either in available tables/fields in the EQuIS database system or in a separate MS Access database (to be linked to queries for generating the EPAR5 EDDs).

3.6.3 Post-Load Data Reports and QC

The DM will produce an electronic analytical data inventory report that will be used by the EC to verify that the analytical CRG EDD data were correctly loaded into the EQuIS Chemistry database. After reviewing this data inventory report, the EC will notify the DM and the LAB of analytical CRG EDDs that have errors and will coordinate with the LAB to correct them.

Once the data has been successfully loaded and all errors have been resolved, the DM will provide the CRG EDDs to Rohm and Haas via the FTP site or e-mail.

3.7 Data Deliverables

3.7.1 Rohm and Haas CRG EDDs

The following describes the file formats, media, and methods of shipment for submission of data to Rohm and Haas. Unless otherwise requested, the DM will submit the final CRG EDDs to Rohm and Haas at the same time the EC submits the corresponding hard copy report deliverables.

3.7.1.1 File Formats

The CRG EDDs will be submitted in CSV ASCII-text file format with text values enclosed by double quotes (").

3.7.1.2 Media

The CRG EDDs files will be posted to the FTP site or e-mailed in compressed form (WinZip compatible). The CRG EDDs will also be provided to Rohm and Haas in uncompressed form on CD-ROM.

3.7.1.3 Methods of Shipment

A CD-ROM with all CRG EDDs will be sent to Rohm and Haas at the following shipping address:

Attn: Carl Coker
Rohm and Haas Company
Engineering Division
3100 State Road
Croydon, PA 19021

3.7.1.4 Requests for EQuIS databases

Upon request, the DM will provide Rohm and Haas with copies of the EQuIS Chemistry and Geology databases, by posting to the FTP site, e-mailing, or shipping on CD-ROM as requested.

3.7.2 USEPA Region 5 EDDs

The following describes the procedures and specifications that will be used by the DM to prepare and submit EPAR5 EDDs, as well as to revise EPAR5 EDDs upon USEPA review (as needed) and manage modifications to the EPAR5 EDD specifications. The EPAR5 EDDs are listed below in Table 6.

TABLE 6
USEPA Region 5 EDDs

EDD Format Name	Description
ERAR5SITE_v1	Site
EPAR5LOC_v1	Location
EPAR5DRA_v1	Drilling Activity
EPAR5GSMP_v1	Geology Samples
EPAR5LTH_v1	Lithology
EPAR5WEL_v1	Well
EPAR5WSG_v1	Well Construction
EPAR5DHP_v1	Down Hole Point Data
EPAR5GWTR_v1	Water Level
EPAR5TBL_v1	Water Table
EPAR5EIW_v1	Extraction-Injection Well
EPAR5SMP_v1	**Chemistry Sample**

TABLE 6
USEPA Region 5 EDDs

EDD Format Name	Description
EPAR5TRS_v1	Chemistry Test/Result
EPAR5TRSQC_v1	**Chemistry Test/Result with QC Data**
EPAR5BAT_v1	**Batch**
EPAR5CFM_v1	Chemical Field Measurement

EDD format names in bold are to be used for reporting of laboratory analytical data

3.7.2.1 Region 5 EDD Preparation

EDD Generation and QC

The DM will generate the EPAR5 EDDs relevant to the field event by querying the CRG EDD data loaded into the EQuIS database system together with any additional EPAR5 data, then exporting the data in the EPAR5 EDD formats. Once generated, the EDD files will be checked using the free EPAR5 version of the Electronic Data Processor (EDP). All errors, conflicts, and new valid values identified by the EPAR5 EDP will be handled as discussed in the following subsections. All EPAR5 EDDs, and associated cover letters (see Section 3.7.2.2), will be sent (via FTP site or e-mail) to Rohm and Haas for review prior to submission.

Resolution of Data Errors and Conflicts

The DM will resolve any errors or data conflicts identified by the EPAR5 EDP with the assistance of the EC, the LAB, and Rohm and Haas. If possible, the DM will make any necessary corrections required to meet the EPAR5 EDD specifications. If warranted and agreed to by Rohm and Haas, these errors or conflicts will be communicated to the USEPA project coordinator or his/her designee to facilitate a satisfactory resolution.

Notification of New Valid Values

Prior to submitting the EPAR5 EDDs, the DM will prepare and send the USEPA project coordinator an e-mail requesting the approval of all new valid values identified by the EPAR5 EDP. Depending upon the outcome of the request, the EPAR5 EDDs may require revision prior to submission.

3.7.2.2 Region 5 EDD Submission

The DM will submit the EPAR5 EDDs to the USEPA at the time of the first EC hard copy report submissions (draft) to the USEPA. EPAR5 EDDs will not be included in subsequent submissions of the EC hard copy reports (revised draft or final), unless revisions to the data are required upon USEPA review (see Section 3.7.2.3). The following information describes the file formats, media, and methods of shipment for the EPAR5 EDDs.

Cover Letter

For each set of EPAR5 EDDs, the DM will prepare a cover letter listing the specific study site, a contact for technical questions, EDD file names, exceptions to the EDD formats, EDDs

not relevant to the field event, requests for new valid values, and the EDD submittal type (USEPA, 2003). If any resubmitted data are included, the reason for the resubmission and guidance on how to handle the original data (e.g., delete original data from database) must also be stated in the cover letter.

File Formats

The EPAR5 EDDs will be submitted in CSV ASCII-text file format with text values enclosed by double quotes ("). Files will be named according to EPAR5 requirements.

Media

Unless e-mail submissions have been pre-arranged with the USEPA project coordinator or his/her designee, the EPAR5 EDDs and an ASCII-text file version of the cover letter will be provided in uncompressed form on CD-ROM, 3.5-inch IBM-compatible diskettes, or 100 megabyte (MB)/250 MB Zip® disks. The media will be labeled with the site name (Rohm and Haas Chemicals LLC – Reading Facility), project code, and date of the EDDs.

Methods of Shipment

All EPAR5 EDD submissions will be sent to the USEPA to the attention of the USEPA project coordinator at the following shipping address (for disk submission) or e-mail address:

Attn: Mirtha Capiro
U.S. Environmental Protection Agency-Region 5
77 West Jackson Boulevard
Chicago, IL 60604

or

capiro.mirtha@epa.gov

3.7.2.3 Correction of EDD Submittals

Rohm and Haas and the DM will review and determine the appropriate method to address comments provided by USEPA (either in electronic or hard copy format) on the EDD submittal. If a correction re-submittal (entire set of EDDs in original submittal with corrections made) is required to address the comment, the DM will communicate the changes/updates to and request revised CRG EDDs and additional EPAR5 data from the EC and the LAB, in accordance with the procedures described in Sections 3.5.3 and 3.5.4. The DM will review the revised CRG EDDs and additional EPAR5 data to ensure that the changes/updates specified by the USEPA have been made. Once the changes/updates have been confirmed, the DM will use the revised CRG EDDs and additional EPAR5 data to update the EQuIS database system (and separate MS Access database for the additional EPAR5 data, as appropriate).

Upon successful updating of EQuIS, the DM will regenerate, review, and resubmit the EPAR5 EDDs to USEPA in accordance with the procedures described in Sections 3.7.2.1 and 3.7.2.2. The entire set of EPAR5 EDDs within the original submittal will be included in the correction re-submittal to the USEPA.

As appropriate, the DM will provide revised CRG EDDs to Rohm and Haas. With respect to those CRG EDDs for which the EC provides the DM with update EDDs (only key fields and fields to be updated are populated) in accordance with Section 3.5.3.4, the DM will regenerate and submit to Rohm and Haas full CRG EDDs containing the revisions.

3.7.2.4 Management of Modifications – USEPA Region 5 EDD Specifications

The USEPA project coordinator or his/her designee will notify Rohm and Haas and the DM of all modifications to the EPAR5 EDD specifications, and will discuss the schedule for implementing said modifications. The DM will ascertain and discuss with Rohm and Haas the impacts of such modifications on data collection and data entry, then discuss with Rohm and Haas the best course of action for rollout of the changes. It is assumed that this course of action will include the DM assisting Rohm and Haas in making appropriate modifications to templates, reference values, and guidance documents, posting them to the CRG web site, and notifying the EC and LAB to check the web site for the modified documents.

4 Data Management Technology, Database Administration, and Records Management

4.1 Data Management Technology

The database maintained by the DM for the Cincinnati site will be Earthsoft's EQuIS database system (version 3.7). The DM currently owns licenses for EQuIS Geology and EQuIS Chemistry modules. These modules and their databases will be the main focal point of the data management system. The applications are located in the Herndon (WDC) office. The EQuIS database system consists of *relational databases* with front-end data entry and querying tools. A relational database is a collection of tables, each representing a certain type or entity of data.

4.2 Database Administration

4.2.1 User Access and Security

The basic goals of data security are (1) to protect the data from unauthorized use, (2) to permit necessary access while protecting against inadvertent changes by authorized users, and (3) to segregate the activities of various data users. The DM will manage the security access usernames, access rights, and passwords.

4.2.2 File Backup

As electronic data are received and uploaded, backup copies of the EQuIS database will be stored on read-only CD-ROMs and on the LAN. The LAN files are backed up daily by the DM IT staff. The CD back-ups will be generated and maintained by the DM. Backups will be performed on a weekly basis, or more frequently as deemed necessary by the DM.

4.3 Records Management

Field logbooks, field data, boring and well construction logs, COC forms, laboratory hard copy and electronic deliverables, data listings, data evaluation reports, correspondence, and other documentation will be maintained by the EC in a project file.

5 Works Cited

Geomatrix Consultants, Inc. 2000. *Quality Assurance Project Plan, Facility Investigation, RCRA §3013 Administrative Order, Morton International, Inc. Facility, [EPA ID No. OHD 000 724 138], Reading, Ohio.* November 2000

USEPA. 2003. *Electronic Data Deliverable (EDD) Specification Manual, Version 1.1, USEPA Region 5.* June 2003.

Appendix A
Completed Chain-of-Custody Examples

Important Chain-of-Custody Elements

Please refer to numbered items on example chain-of-custody forms on the next two pages. These elements represent a subset of the required chain-of-custody elements described in Section 3.4.2.

1. Enter the proper **shipping contact** (for report) for projects in shipping info portion of the form.

2. The **point of contact** (name and phone number) **for sample issues** (decision making; Project Manger or designee) should be listed in the "comments" or "special instructions" portion of the chain-of-custody when appropriate.

3. The **chain-of-custody identifier** must be listed in the appropriate space provided on the form or in upper right hand corner of the form. Use either the pre-printed, lab-assigned identifier shown in Figure A-1, if available, or Rohm and Haas chain-of-custody identifier shown in Figure A-2 (see the CRG web site for the Rohm and Haas naming convention for chain-of-custody identifiers).

4. The **cooler identifier** must be listed on the chain-of-custody form, and may need to be written in the margin as shown in the example if a dedicated field in the form does not exist for it (see the CRG web site for the Rohm and Haas naming convention for cooler identifiers).

5. The appropriate **sample matrix codes** (see valid reference value list on CRG web site) must be used in the matrix field of the form. Commonly used codes are listed below:

   SO for Soil
   SE for Sediment
   WG for Groundwater
   WS for Surface water
   WH for Equipment rinsate blank
   WQ for Trip blank

6. The lines on which the **matrix spike and matrix spike duplicate sample codes** and their **associated normal sample codes** are listed must be **marked by large asterisks** (before the lines). Then, at the bottom of the form, an asterisk and the following words must be written EXACTLY: "*These three samples are for lab QC." This will indicate to the lab that the two additional volumes are for spike analysis and not normal analysis.

FIGURE A-1
Example of Completed Chain-of-Custody Form with Pre-Printed, Lab-Assigned Chain-of-Custody Identifier

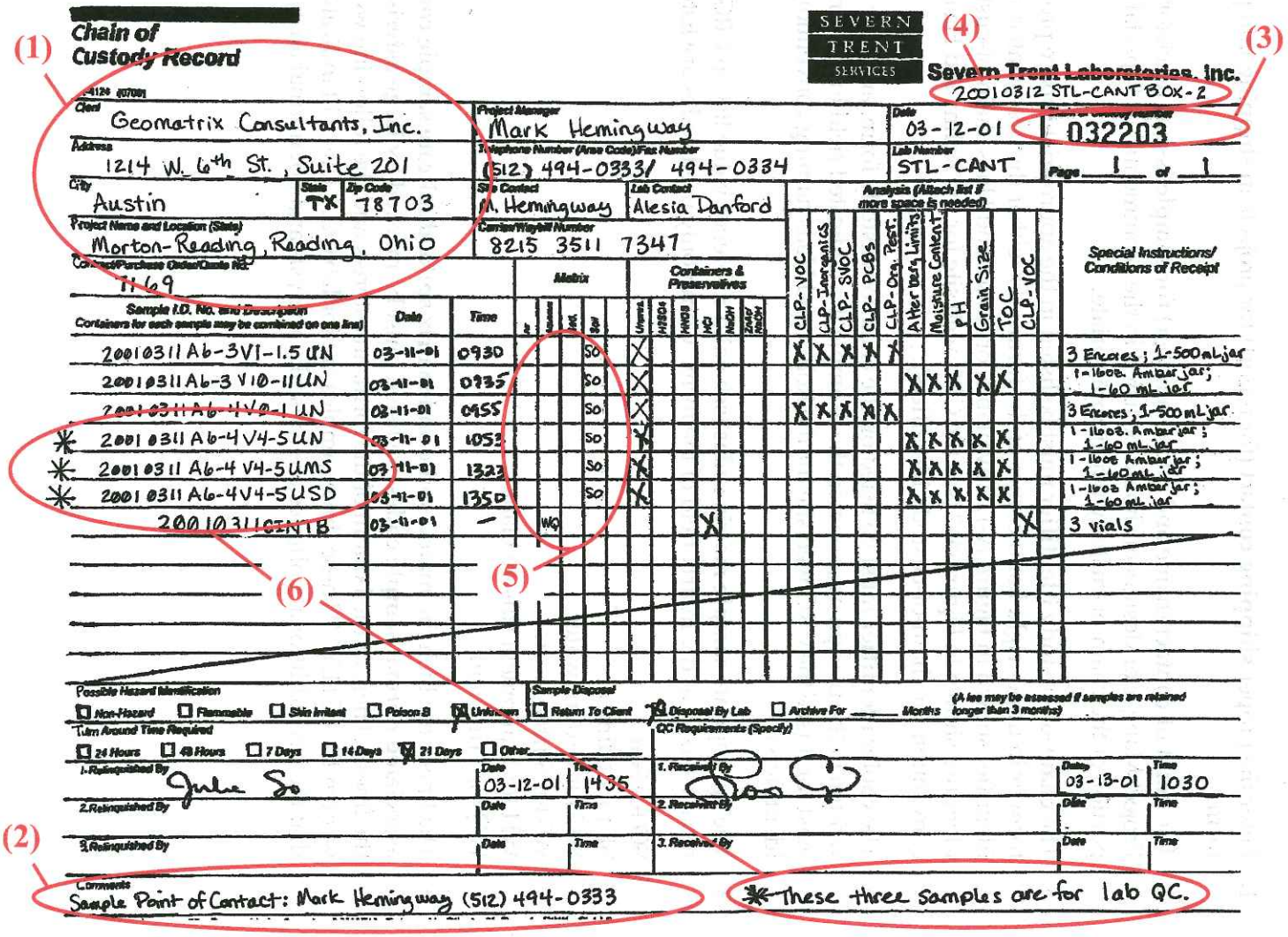
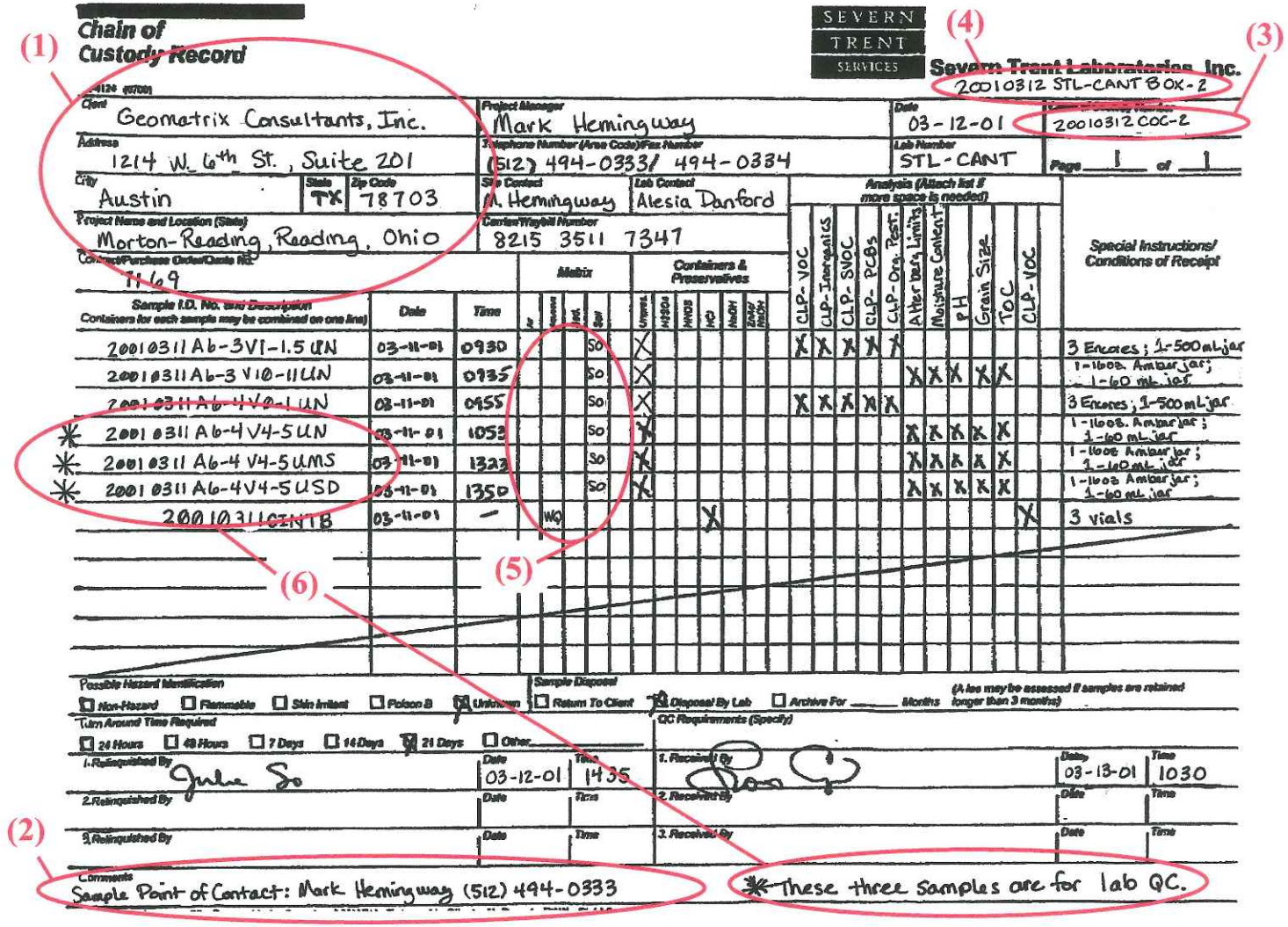


FIGURE A-2
Example of Completed Chain-of-Custody Form with Rohm and Haas Chain-of-Custody Identifier



Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

(1) (2) (3) (4) (5) (6)

Client	Geomatrix Consultants, Inc.
Project Manager	Mark Hemingway
Date	03-12-01
Address	1214 W. 6th St., Suite 201
Telephone Number (Area Code)/Fax Number	(512) 494-0333/ 494-0334
Lab Number	STL-CANT
City / State / Zip Code	Austin / TX / 78703
Site Contact	M. Hemingway
Lab Contact	Alesia Danford
Project Name and Location (State)	Morton-Reading, Reading, Ohio
Carrier/Waybill Number	8215 3511 7347
Contract/Purchase Order/Quote No.	1169

20010312 STL-CANT BOX-2

20010312 COC-2

Page 1 of 1

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix	Containers & Preservatives	Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
20010311Ab-3V1-1.5UN	03-11-01	0930	SO	Unpres.	CLP-VOC, CLP-Inorganics, CLP-SVOC, CLP-PCBs, CLP-Org. Pest., Alkalinity, Moisture Content, pH, Grain Size, TOC, CLP-VOC	3 Encores; 1-500mL jar
20010311Ab-3V10-11UN	03-11-01	0935	SO	Unpres.		1-16oz. Amber jar; 1-60 mL jar
20010311Ab-4V9-1UN	03-11-01	0955	SO	Unpres.		3 Encores; 1-500mL jar
* 20010311Ab-4V4-5UN	03-11-01	1052	SO	Unpres.		1-16oz. Amber jar; 1-60 mL jar
* 20010311Ab-4V4-5UMS	03-11-01	1323	SO	Unpres.		1-16oz Amber jar; 1-60 mL jar
* 20010311Ab-4V4-5USD	03-11-01	1350	SO	Unpres.		1-16oz Amber jar; 1-60 mL jar
20010311CZNTB	03-11-01	—	WQ	ZnAc/NaOH	TOC	3 vials

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☒ 21 Days ☐ Other

QC Requirements (Specify)

1. Relinquished By	Julie So	03-12-01	1435	1. Received By	03-13-01 / 1030
2. Relinquished By				2. Received By	
3. Relinquished By				3. Received By	

Comments: Sample Point of Contact: Mark Hemingway (512) 494-0333

* These three samples are for lab QC.

CH2MHILL

8501 West Higgins, Suite 300
Chicago, IL 60631
Tel 773-693-3809
Fax 773-693-3823

March 03, 2003

Ms. Mirtha Capiro
Project Coordinator
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, DRE-9J
Chicago, Illinois 60604-3590

Subject: **Final Data Management Plan (DMP),**
Morton International, Inc., Reading, Ohio Site
EPA ID No. OHD 000 724 138

Dear Ms. Capiro:

The enclosed final DMP is submitted for review to USEPA on behalf of the Rohm and Haas Company in partial fulfillment of the Region 5 RCRA 3008h Administrative Order given for the Morton International, Inc., Reading, Ohio site. This DMP has been prepared based on the outcome of our meeting on January 22, 2003, at USEPA Region 5 offices.

Please feel free to contact Peter Palena/Rohm and Haas at (215) 785-7079 or myself at (773) 693-3809 if you have any questions.

Sincerely,

CH2M HILL

Joel D. Wipf
Project Manager

Cc: Peter Palena/Rohm and Haas
Paul Cichy/Rohm and Haas
Jen Telford/CH2M HILL

Site Investigation and Remediation

Data Management Plan

for

Morton International, Inc. Facility

EPA ID No. OHD 000 724 138

Reading, OH

Prepared for

Rohm and Haas

Bristol, PA

March 2003

CH2MHILL

CH2MHILL

8501 West Higgins, Suite 300
Chicago, IL 60631
Tel 773-693-3809
Fax 773-693-3823

March 03, 2003

Ms. Mirtha Capiro
Project Coordinator
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, DRE-9J
Chicago, Illinois 60604-3590

Subject: **Final Data Management Plan (DMP),**
Morton International, Inc., Reading, Ohio Site
EPA ID No. OHD 000 724 138

Dear Ms. Capiro:

The enclosed final DMP is submitted for review to USEPA on behalf of the Rohm and Haas Company in partial fulfillment of the Region 5 RCRA 3008h Administrative Order given for the Morton International, Inc., Reading, Ohio site. This DMP has been prepared based on the outcome of our meeting on January 22, 2003, at USEPA Region 5 offices.

Please feel free to contact Peter Palena/Rohm and Haas at (215) 785-7079 or myself at (773) 693-3809 if you have any questions.

Sincerely,

CH2M HILL

Joel D. Wipf
Project Manager

Cc: Peter Palena/Rohm and Haas
Paul Cichy/Rohm and Haas
Jen Telford/CH2M HILL

Contents

Appendixes

Tables

Figure

1. Introduction

The Morton International, Inc., facility located in Reading, Ohio (referred to as the "Cincinnati site" or the "site") has been operated as an active chemical blending and manufacturing facility since 1950 (Geomatrix Consultants, Inc., 2000). Rohm and Haas Company acquired the site and is currently responding to a United States Environmental Protection Agency (USEPA) Region 5 Resource Conservation and Recovery Act (RCRA) 3008h Administrative Order. USEPA Region 5 (EPAR5) recently modified the order to include electronic data submittals and a data management plan (DMP). This DMP has been written in response to the modified order and describes the system that will be used to manage electronic data generated by ongoing investigations and streamline the production of electronic data deliverables (EDDs) for submission to EPAR5 and Rohm and Haas Company.

The objectives that are critical to the success of the data management process are as follows:

- Standardize and facilitate the transfer of field-generated data into the data management system.
- Minimize the uncertainties associated with the data, data-derived products, and interpretation of results through quality assurance and quality control (QA/QC) measures and practices.
- Provide Rohm and Haas with EQuIS-compliant data in the format they specify that is suitable for decision making and can be reliably used to analyze alternatives related to remediation strategies.
- Provide EPAR5 with EQuIS-compliant EDDs in the format they specify.

2. Data Collection and Management Team

The data collection and management team for the Cincinnati site currently consists of the following members:

- Environmental Contractor (EC) - Geomatrix Consultants, Inc.
- Laboratory Contractor (LAB) - Severn Trent Laboratories (STL), Inc. (North Canton, Ohio)
- Data Management Contractor (DM) - CH2M HILL

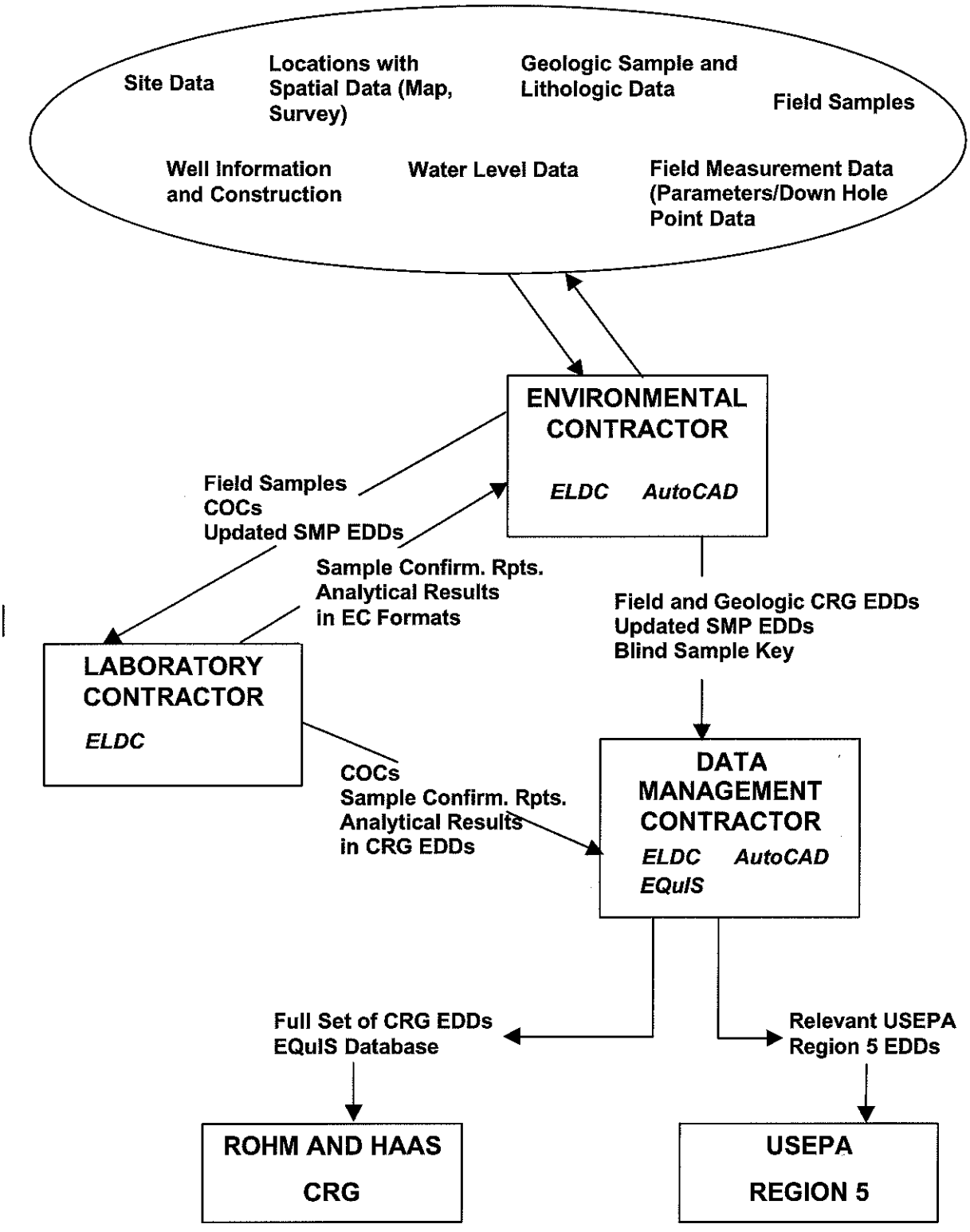
The functional responsibilities of the team are illustrated in Figure 1 and described below. All EDDs, both those prepared for Rohm and Haas' Corporate Remediation Group (CRG) and those prepared for EPAR5, will use the Comma-Separated Variable (CSV) ASCII-text file format.

2.1 Environmental Contractor Roles and Responsibilities

The EC is responsible for various aspects of the planning, execution, and reporting of investigation and sampling events. These responsibilities, in addition to those specified in the Quality Assurance Project Plan (QAPP) prepared by Geomatrix Consultants, Inc. (2000), include the following:

- Define a clear statement of event objectives.
- Prepare a Work Plan covering all details of the event.
- Check the Rohm and Haas CRG website (hereafter referred to as the "CRG website") at http://www.rohmhaas.com/crg for up-to-date CRG and EPAR5 data requirements, valid reference value lists, ELDC format files, and guidance documents.
- Determine what measurements will be made in the field and what samples will be collected for analyses in approved laboratories.
- Propose sample codes for each sample to be taken using the Rohm and Haas CRG naming conventions available on the CRG website. These sample codes may need to be updated after the event to reflect field changes.
- Set the data quality objectives (DQOs) and QC level appropriate for each measurement.
- Select the locations at which the investigation and/or sampling will take place.
- Secure or cause to be prepared an AutoCAD site map with appropriate coordinates on which each location that will be addressed during the event can be spatially represented. Provide this AutoCAD map to the DM and CRG. For the Cincinnati site, an AutoCAD site map has been generated and subsequently updated by Geomatrix Consultants, Inc. Therefore, a new site map is not necessary for this project.
- Oversee/carry out all geologic investigation work.

FIGURE 1
Data Management Team Functional Responsibilities



Required software in ***italics***

- Make certain that the EDDs for site data (CRG SITE) and location data (CRG LOC) are up to date. If new locations are created during the event, survey all new locations and reference points created during the event. Enter this data to the appropriate CRG EDDs. Check the EDDs using the Electronic Laboratory Data Checker (ELDC) available from Earthsoft, Inc. (use the current ELDC format files and valid reference values available on the CRG website. Correct any errors found and send the EDDs to the DM.

- When conducting subsurface drilling (soil boring or other), record drilling specifications and collect geologic samples for lithologic observation and stratigraphic interpretation when required in the Work Plan; enter corresponding data into the EDDs for drilling activity data (CRG DRA), geologic sample data (CRG GSMP), and lithology data (CRG LTH). If water table observations (unstabilized/stabilized) are recorded in boreholes, enter these levels into the EDD for water table data (CRG TBL). Use CRG-approved codes in these EDDs. Check the EDDs with the ELDC. Correct any errors found and send the EDDs to the DM.

- When a well is installed, rebuilt, or resurveyed, enter the required data into the EDDs for well information (CRG WEL) and well construction (CRG WSG). Use CRG-approved terms to describe the well purpose, well datum, and well components. If appropriate, enter water table observations (unstabilized/stabilized) during and after well installation into the CRG TBL EDD and enter additional drilling activity data into the CRG DRA EDD. Check the EDDs with the ELDC. Correct any errors found and send the EDDs to the DM.

- When conducting a water level survey, enter all the required data into the EDD for water levels (CRG GWTR). Make certain to enter the elevation of the reference points. Check the EDDs with the ELDC. Correct any errors found and send the EDDs to the DM.

- Collect any other data required by the Work Plan and enter the data into the appropriate EDDs. Check the EDDs with the ELDC. Correct any errors found and send the EDDs to the DM.

- When samples are to be taken for analysis by an approved laboratory, EC responsibilities include:

  - Collaborate with the LAB during the Work Plan preparation and agree on suitable analytical methods that meet the DQOs.

  - Create a draft copy of the CRG SMP file, the sample description EDD, based on information from the Work Plan and the Rohm and Haas sample naming convention. This draft CRG SMP EDD is considered a part of the Work Plan and will be submitted for review at the same time as the Draft Work Plan.

  - Provide a copy of the Final Work Plan to the LAB and the DM prior to the sampling event.

  - Collaborate with the LAB on the number and type of containers needed for the sampling event.

  - Oversee/carry out the field sampling event.

- Ensure that the required number of sample labels is present in the field at the time of sample collection; if appropriate, request the sample labels from the LAB. Ensure conformance to the bottle-labeling scheme described in the Rohm and Haas protocol for labeling field samples.
- Prepare all chain-of-custody (COC) forms using the proper CRG sample code for each sample (except for field duplicates which are assigned blind codes). Create a unique identifier for each COC if a pre-printed, lab-generated identifier is not already present on the COC.
- Arrange for timely transport of the samples to the LAB.
- Manage the blind sample codes used for field duplicate samples. QA/QC practices require that each field duplicate sample be identified with a blind sample code. This code must be cross-referenced to a proper CRG field duplicate sample code in the EC's field notebook. **The EC will then forward BY E-MAIL ONLY a copy of these cross-references to the DM at the conclusion of the sampling event.**
- Immediately upon the conclusion of the sampling event, update the draft CRG SMP data (developed with Work Plan) using information from the COC forms and the sample confirmation reports that reflect the actual field event. This includes, but is not limited to, updating the sample code (to reflect the actual sampling date and time, as well as depth), adding the COC identifier for each sample, and adding the date the samples left the site for the lab. QA/QC practices require that the updated CRG SMP data continue to identify each field duplicate sample BY its blind sample code. Once updated, the CRG SMP data must be separated by sample delivery group (also referred to as "laboratory lot number" or "laboratory job number") into individual electronic files prior to submission to the LAB.
- Check each individual, updated CRG SMP EDD file using the ELDC and correct any errors; forward corrected copies of the updated CRG SMP EDD file(s) to the LAB and the DM.
- Receive from the LAB the analytical results in standard deliverable form, which includes hard copy reports (scanned version on CD-ROM) and electronic data in EC's designated formats. The EC's formats may be the same as the CRG EDD formats or may be different.
- Check the standard deliverables for completeness and notify the LAB of any discrepancies (errors, missing results, etc.).
- Provide the data to a third-party validator in accordance with the requirements of the Work Plan and the QAPP (Geomatrix Consultants, Inc., 2000)
- Forward a copy of the data validation report to the DM for incorporation of any validator qualifiers into the CRG TRSQC EDDs.

- Prepare all required reports.

2.2 Laboratory Contractor Roles and Responsibilities

The LAB is responsible for various aspects of sample custody, preparation, analysis, quality assurance (QA/QC), and reporting. These responsibilities, in addition to those specified in the QAPP (Geomatrix Consultants, Inc., 2000), include the following:

- Collaborate with the EC during the Work Plan preparation phase and agree on the appropriate analytical methods to be used.
- Review the Work Plan prior to the sampling event.
- Collaborate with the EC on the number and type of containers needed for the sampling event; prepare and deliver to the field the required sample containers and coolers.
- Provide the required number of sample labels as requested by the EC.
- Receive the samples from the field and check that the COC forms correctly cover all samples submitted; provide a copy of the COC to the DM.
- Log samples into the Laboratory Information Management System (LIMS) using information from the COC forms and the Work Plan.
- Prepare sample confirmation reports, one for each the sample delivery group and listing the following for each sample received: the sample delivery group number, the logged client sample identifier (i.e., proper CRG sample code or blind code), the assigned laboratory identifier, the sample date and time, the sample matrix, the requested tests, the date received in the lab, and the results due date. When possible, the report should also include the number of containers received, the acceptable holding time, and the holding time expiration date. Send copies of the confirmation report to the EC and the DM as soon as the all the samples from the event have been logged.
- Correct any misentered client sample codes in the LIMS as directed by the DM.
- Receive the updated CRG SMP EDD(s) from the EC and add lab information to the following fields for each sample listed: sample_receipt_date, lab_project_number, rh_po_number, and sample_delivery_group designation.
- Check the CRG website at http://www.rohmhaas.com/crg for up-to-date CRG and EPAR5 data requirements, valid reference value lists, ELDC format files, and guidance documents.
- Assure that calibrations are current.
- Carry out the requested analyses and requested QC.
- Log any QC samples generated in the laboratory into the updated CRG SMP EDD(s) received from the EC (method blanks, lab replicates, etc., but NOT calibration data). All relevant fields must be completed.
- Prepare and complete the test/results EDD (CRG TRSQC), and the analytical batch EDD (CRG BAT); include the container designations (container type codes) into the field container_id.

- Check the three completed CRG EDDs using the ELDC (use the current ELDC format files and valid reference values available on the CRG website.
- Correct any errors found and send the corrected three-file sets of CRG EDDs to the DM.
- Respond to requests by the DM for additional or corrected information. If new EDDs are generated in order to respond to these requests, check them as described above.
- Prepare required reports/hard copy deliverables.

2.3 Data Management Contractor Roles and Responsibilities

The DM is responsible for various aspects of data management, database administration, and EDD production. These responsibilities include the following:

- Collaborate with Rohm and Haas to check that the CRG and EPAR5 data import templates (i.e. EDD templates), valid reference value listings, ELDC formats, and various guidance documents that are posted on the CRG website are current and correct.
- Advise the EC and the LAB which of these data import templates, valid reference value files, and ELDC formats they should use to prepare, check, and submit data.
- Review the Work Plan prior to the sampling event.
- Notify the EC and the LAB if they need to provide data not normally required for the CRG EDDs, but are required to satisfy certain EPAR5 requirements. Request that this data be included in the CRG EDDs when they are submitted, if possible.
- When samples have been taken for analysis by the LAB, DM responsibilities include:
  - Receive the following immediately after the completion of the sampling event: (1) the updated CRG SMP EDD(s) from the EC; and (2) the sample confirmation report(s) from the LAB. Identify any errors or discrepancies in the laboratory sample confirmation report(s) and communicate those issues to the LAB for correction.
  - When the analytical work has been completed, receive the three-file sets of EDDs, comprised of the CRG SMP, CRG TRSQC, and CRG BAT, after they have been completed by the LAB; replace blind sample codes with proper Rohm and Haas sample codes for the field duplicate samples in all three EDDs using the cross-referenced information received from the EC.
  - Carry out a completeness check of the results in comparison to the COC forms; contact the LAB to resolve any missing records or discrepancies.
  - Review third-party data validation reports and ensure that all validator qualifiers are added to the appropriate field in the CRG TRSQC EDDs.
- Check all EDDs for conformance with the required CRG EDD specifications and confirm that any EPAR5-specific data has been received.

- Perform EQuIS pre-load and load checks; resolve with the EC and the LAB errors preventing loading into the EQuIS database system.
- Load and maintain the data in an EQuIS database system, ensuring database completeness, integrity, redundancy control, security, and backup.
- Create and provide EPAR5 with EQuIS-compliant EDDs in the format they specify.
- Provide Rohm and Haas with EQuIS-compliant EDDs in the Rohm and Haas format requested.
- Provide copies of the EQuIS databases to Rohm and Haas when requested.
- Communicate as needed with EPAR5 and Rohm and Haas regarding data deliverables and submission schedules.

3. Data Flow

3.1 Overview of Procedures

Data flow is "cradle-to-grave" processing of data from planning the event (development of a Work Plan or Sampling and Analysis Plan) to the receipt of the results by the end user. The data management procedures defined for the EC, the LAB, and the DM in Table 1 are specified to maintain the validity of all data from the time they are obtained until they become part of the EQuIS database system.

3.2 Project and Event Planning

For each investigation, the EC will determine the data collection requirements needed to meet project objectives and DQOs, as well as negotiate with the LAB on the analytical methods required to fulfill the objectives and determine the appropriate QC level, during the preparation of the Work Plan and in accordance with the QAPP (Geomatrix Consultants, Inc., 2000). **These data collection requirements must also take into account the requirements of both the Rohm and Haas CRG EDD and the EPAR5 EDD formats**

To ascertain what data must be collected to meet Rohm and Haas CRG requirements, the EC must consult the two Microsoft (MS) Excel Workbooks maintained by Rohm and Haas on the CRG website. One workbook contains EDD templates for geologic data and the other contains EDD templates for chemistry data. Each worksheet within these workbooks contains the template for one EDD in the form of two header rows. Each column represents a field in the EQuIS database and the header rows for each column are color-coded to indicate what the requirements are for providing data for that field. A separate worksheet in each workbook provides the key to the color coding and guidance on what fields require data entry. The EC must base the data collection requirements for each field event on the requirements of the relevant EDDs that correspond to the types of field activities being performed. A similar set of workbooks for EPAR5 EDDs can also be found on the CRG website to ascertain EPAR5 requirements. The CRG website should be checked prior to the preparation of any Work Plan or data collection activity to obtain an up-to-date set of EDD requirements.

During the preparation of the Work Plan, the EC will create a draft CRG SMP EDD for review by Rohm and Haas in advance of the event (submit with Draft Work Plan). All sample codes will be assigned in accordance with the Rohm and Haas CRG sample naming conventions.

Tasks fulfilled by the EC in preparation for each sampling event include, but are not limited to, preparing detailed project instructions that specify proper Rohm and Haas sample codes (from draft CRG SMP EDD), locations, matrices, analyses to be requested, preservatives, number of containers, chemical field parameters to be measured, etc. The EC is responsible for ensuring that bottle labels are available in the field at the time of sampling. If more efficient, the EC may request pre-printed bottle labels from the LAB; to do so, the EC will need to send the sample information to the LAB in advance of the sampling event.

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Project and Event Planning			Work with Rohm and Haas to maintain up-to-date CRG EDD template, valid reference values, ELDC format files
	Download up-to-date EDD templates, valid reference values, ELDC format files, and guidance documents from Rohm and Haas CRG website; review to ascertain data collection requirements (Section 3.2)		Advise the EC which CRG EDD templates, valid reference values, and guidance documents on the Rohm and Haas CRG website they should use (Sections 3.2 and 3.5.3.1)
	Prepare Work Plan with clear statement of event objectives, data quality objectives, data collection requirements (with input from DM), and QC level (Section 3.2)		
	Collaborate with LAB on analytical methods (Section 3.2)	Collaborate with EC on analytical methods (Section 3.2)	
			Create project FTP site and distribute access information (Section 3.5.2)
	Prepare and QC draft CRG SMP using Rohm and Haas sample naming convention and blind codes for field duplicates; submit with Draft Work Plan for Rohm and Haas' review; revise CRG SMP per Rohm and Haas' comments (Sections 3.2.1 and 3.2.2)		
	Provide Work Plan to LAB and DM (Section 3.2)	Review Work Plan from EC (Section 3.2)	Review Work Plan from EC; notify the EC and LAB of data collection needs necessary to satisfy Rohm and Haas CRG EDD requirements and any additional data that must be provided to meet EPAR5 EDD requirements (Section 3.2)
		Download up-to-date EDD templates, valid reference values, ELDC format files, and guidance documents from Rohm and Haas CRG website; review to ascertain analytical EDD requirements (Section 3.2)	Advise the LAB which CRG EDD templates, valid reference values, and guidance documents on the Rohm and Haas CRG website they should use (Sections 3.2 and 3.5.4.1)

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Project and Event Planning (cont.)	Prepare detailed field instructions (Section 3.2)	Prepare and deliver sample containers, sample labels, and coolers to the field (Section 3.2)	
Event Data Collection	Create bottle labels (Section 3.2.3; this task may be delegated to the lab if more efficient: provide label info)		
	Collect and log field samples, normal and QC (Section 3.3.1)		
	Collect field, geologic, and other data (Section 3.3.2)		
	Obtain data collected by subcontractors (Section 3.3.2)		
Sample Tracking	Package samples and prepare chain-of-custody (COC) forms (1 per cooler); ship to LAB (Sections 3.4.1 and 3.4.2)	Receive samples from EC and check against COCs; log samples and requested analyses into the LIMS (Section 3.4.3)	
		Provide copies of COCs to DM (Section 3.4.3)	Receive copies of COCs from LAB
	Receive and review sample confirmation reports from LAB (Section 3.4.4.2)	Prepare sample confirmation reports and send to EC and DM (Section 3.4.4.1)	Receive sample confirmation reports from LAB; QC client sample codes, analyses requested, etc. (Section 3.4.4.2)
		Correct errors in sample data in the LIMS identified by DM (from sample confirmation reports) (Section 3.4.4.2)	Communicate errors identified from sample confirmation reports to LAB and DM (Section 3.4.4.2)
	Update SMP EDDs, assure blind sample codes in place, and add any additional EPAR5 data as directed by DM; prepare individual SMP EDDs by sample delivery group, QC with ELDC and the formats/reference values posted on the CRG website, make corrections, and then send to LAB (Section 3.4.5);	Receive updated SMP EDDs from EC; update appropriate EDD fields and log any QC samples generated in the laboratory (Section 3.5.4.1)	Receive updated SMP EDDs from EC
	Sent blind sample key to DM (Section 3.5.3.3)		Receive blind sample key from EC
		Perform requested analyses (Section 3.4.6)	

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Data Entry and Transfer	Check Rohm and Haas CRG website for updated versions of the EDD templates, valid reference values, ELDC format files, and guidance documents prior to data entry; review for changes (Section 3.5.3.1)	Check Rohm and Haas CRG website for updated versions of the EDD templates, valid reference values, ELDC format files, and guidance documents prior to EDD generation; review for changes (Section 3.5.4.1)	
		Prepare the standard deliverable for EC and analytical CRG EDDs for DM (Section 3.5.4.1)	
		QC and correct analytical CRG EDDs using ELDC and Rohm and Haas formats/valid values (Section 3.5.4.2)	
	Receive standard deliverables from LAB; check for completeness (Sections 3.4.7 and 3.5.4.3)	Send standard laboratory deliverables to EC and CRG EDDs to DM within specified turn-around time (Sections 3.4.6 and 3.5.4.2)	Receive analytical CRG EDDs from LAB; check for completeness (including results count); in EDDs, check for discrepancies in sample codes between files (Sections 3.4.7 and 3.5.4.3) and for conformance to required specifications (Section 3.6.1)
	Communicate errors in laboratory deliverables to LAB for revision (Sections 3.4.7 and 3.5.4.3)	Correct the errors identified in the laboratory deliverables by the EC and DM; regenerate corrected deliverables as needed; recheck CRG EDDs with ELDC (Section 3.5.4.4)	Communicate errors in CRG EDDs to LAB for revision; if errors are minor, make corrections to EDDs directly and notify LAB (Sections 3.4.7 and 3.5.4.3)
	Work with DM and LAB to resolve analytical CRG EDD non-conformance issues (Section 3.6.1)	Work with DM and EC to resolve analytical CRG EDD non-conformance issues (Section 3.6.1)	Communicate with EC and LAB to resolve non-conformance issues identified in analytical CRG EDDs; if issues are minor, make corrections to EDDs directly and notify EC and/or LAB (Section 3.6.1)
	Receive revised deliverables from LAB; check for completeness and ensure corrections were made (Section 3.5.4.5)	Send revised deliverables to EC and revised CRG EDDs to DM (Section 3.5.3.4)	Receive revised CRG EDDs from LAB; check for completeness and ensure corrections were made; replace blind sample codes with proper CRG sample codes using key (Section 3.6.1)
	Submit (corrected) laboratory deliverables to data validator (Section 3.5.4.5)		

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Data Entry and Transfer (cont.)	Receive data validation report from data validator and review; forward to DM, note changes to any data qualifiers (Section 3.5.4.5)		Receive data validation report from EC and ensure validator qualifiers are incorporated into CRG TRSQC EDDs (Sections 3.5.4.5 and 3.6.1)
	Send site map to DM (Section 3.5.3.4)		Receive site map from EC
	Prepare all relevant field and geologic CRG EDDs and include any additional EPAR5 data as directed by DM (Section 3.5.3.1)		
	QC and correct field and geologic CRG EDDs using ELDC and the formats/reference values posted on the CRG website; send to DM (Section 3.5.3.2)		Receive field and geologic CRG EDDs with any EPAR5 data from EC; check for conformance to required specifications (Section 3.6.1)
	Work with DM to resolve field and geologic CRG EDD and EPAR5 non-conformance issues (Section 3.6.1)		Communicate with EC to resolve errors and deviations identified in field and geologic CRG EDDs and EPAR5 data (Section 3.6.1)
Data Loading			Perform pre-load data checks; use site map to check location coordinates (Section 3.6.1)
			Load all CRG EDDs into the EQuIS database system (Section 3.6.2)
			Generate post-load reports and QC for completeness (Section 3.6.3)
	Work with DM and LAB to resolve any errors or missing results in analytical CRG EDDs; work with DM regarding errors in field or geologic CRG EDDs (Section 3.6.3)	Work with EC and DM to resolve any errors or missing results in analytical CRG EDDs (Section 3.6.3)	Communicate any errors or missing results/data to LAB and EC; work with LAB and EC to resolve these issues (Section 3.6.3); reload (Section 3.6.3)
			Provide Rohm and Haas with all final CRG EDDs, versions modified during loading and those that remained unmodified, for archiving (Section 3.7.1)
Data Deliverables			Generate EPAR5 EDDs and QC with ELDC and EPAR5 formats and valid values (Section 3.7.2.1)
			Send all final CRG EDDs and EPAR5 EDDs to Rohm and Haas for review

TABLE 1
Data Management Procedures for EC, LAB, and DM

Data Flow	Environmental Contractor (EC)	Laboratory Contractor (LAB)	Data Management Contractor (DM)
Data Deliverables (cont.)	Work with DM to resolve any outstanding errors or data conflicts in the CRG EDDs or EPAR5 EDDs (Section 3.7.2.1)	Work with DM to resolve any outstanding errors or data conflicts in the CRG EDDs or EPAR5 EDDs (Section 3.7.2.1)	Resolve any outstanding errors or data conflicts in the CRG EDDs or EPAR5 EDDs, with assistance from EC, LAB, and Rohm and Haas as needed (Section 3.7.2.1)
			Submit EPAR5 EDDs to USEPA (Section 3.7.2.2)
			Provide copies of EQuIS databases to Rohm and Haas upon request (Section 3.7.1.4)

Preparations by the EC must also include specifying requirements and mechanisms for recording or obtaining spatial information from surveyors (coordinate system, datums, accuracy, etc.), drilling information, logging details relative to geologic samples and lithologic observations from boreholes, well installation information, water level survey data, down-hole survey data (e.g., borehole geophysics), etc.

The LAB will collaborate with the EC on the selected analytical methods during the Work Plan phase and will review the Work Plan (provided by the EC) prior to the sampling event. The CRG website should be checked upon review of the Work Plan to obtain an up-to-date set of EDD requirements.

The LAB will also prepare and deliver to the field the requested sample containers, sample labels (as requested by the EC, either blank or pre-printed), and coolers. If requested by the EC, the bottle labels will be prepared by the LAB in advance of field collection using sample information sent by the EC.

The DM will review the Work Plan (provided by the EC) and consult as needed with the EC and the LAB regarding the CRG and EPAR5 EDD requirements and their impact on data collection and EDD generation.

3.2.1 Draft CRG SMP EDD Preparation

As part of the planning for each sampling event, the EC will prepare a draft CRG SMP EDD based on the Work Plan and using the corresponding CRG template in accordance with CRG EDD requirements and guidance.

This draft CRG SMP EDD will contain records for each field sample to be collected, including all field QC samples (field duplicates, field blanks, trip blanks, equipment blanks, etc.) and each sample volume collected for matrix spike and matrix spike duplicates. Blind sample codes will be inserted in place of the actual sample codes for all field duplicates to meet QA/QC requirements. The blind sample code and the corresponding proper CRG sample code will be recorded in the field logbook for each field duplicate sample. All

required SMP EDD fields must be completed using values based on the Work Plan specifications, the valid reference values, and the proposed field work schedule.

The EC will send the draft CRG SMP EDD to Rohm and Haas for review at the same time as it submits the Draft Work Plan. Revisions to the draft CRG SMP EDD will be made by the EC based on Rohm and Haas' comments.

3.2.2 Rohm and Haas Sample Naming Convention

All field samples and field-collected sample volumes for matrix spike and matrix spike duplicate analyses will be given sample codes according to the Rohm and Haas CRG sample naming convention that will be incorporated as a modification to the current QAPP (Geomatrix Consultants, Inc., 2000). The CRG sample naming convention should be followed for all samples.

3.2.3 Bottle Labeling

Bottle labels will be prepared in accordance with the Rohm and Haas CRG specifications listed in the *Protocol for Labeling Field Samples* found on the CRG website.

3.3 Event Data Collection

The EC will conduct the field event according to the detailed instructions prepared during the planning phase. In addition to specifications outlined in the Work Plan and the QAPP (Geomatrix Consultants, Inc., 2000), data collection, field logging, and COC paperwork will be completed following the standards and instructions provided in this section.

3.3.1 Sample Collection and Logging

Samples will be collected by the EC following procedures outlined in the Work Plan, QAPP (Geomatrix Consultants, Inc., 2000), and project instructions. Based on the requirements of the EC field team will record sampling data during sample collection in field logbooks including, but not limited to, the following:

- Location name
- Sample code (actual sample code and blind sample code, both if appropriate)
- Sample date and time
- Sample matrix and type
- Sample depths (starting and ending)
- Number of containers per analysis

Changes, additions, or deletions to the sampling information are to be noted in the field logbooks. All field parameters measured during sample collections, such as pH, turbidity, dissolved oxygen, and temperature, are also to be recorded in the field logbooks.

3.3.2 Geologic, Well Construction, and Other Data Collection

The EC (or designated subcontractor) will record in field logbooks or appropriate data storage devices the data needed to meet the requirements of the Rohm and Haas CRG and the EPAR5 EDDs. Some of the required data and fields are listed below in Table 2. The EC

should check the CRG website prior to the preparation of any Work Plan or data collection activity for an up-to-date set of requirements.

TABLE 2
Select Data and Fields Required for Geologic, Well Construction, and Other Data Collection

Data/Field	Data/Field	Data/Field
location name	location type	survey data
total depth	drilling specifications	geologic sample data
lithologic descriptions	total well depth	well stickup
boring/drilling dates	well installation dates	well construction
water level data	borehole geophysics	water table(during soil boring or well installation)

For survey data, the required information given in Table 3 must be obtained from the surveying subcontractor or recorded by the EC if directly using global positioning system (GPS) equipment:

TABLE 3
Required Survey Information

Data/Field	Data/Field
coordinate collection method	horizontal benchmarks
coordinate system	horizontal datum
XY coordinates	coordinate units
coordinate accuracy (+/-value)	coordinate accuracy units
elevation collection method	vertical datum
surface elevation (ground or other)	top of casing elevation
elevation units	elevation accuracy (+/-value)
elevation accuracy unit	

For borehole geophysical data, it is recommended that such data be collected in a digital format conducive to the down hole point data EDD (CRG DHP) specifications.

3.4 Sample Tracking

The EC and the LAB will incorporate the following procedures as part of the sample tracking process, in addition to those defined in the Work Plan regarding

3.4.1 Sample Packaging and Shipment

The EC will package samples for shipment to the laboratory according to procedures specified in the Work Plan and the QAPP (Geomatrix Consultants, Inc., 2000). Each cooler of samples will be shipped with an individual COC. All bottles pertaining to an individual sample must be packaged in the same cooler as much as possible. The EC will be responsible for filling out the COCs and shipping the samples. The EC should cooperatively work with the laboratory to ensure analyses are completed as required and that discrepancies between the COCs and the samples are resolved.

3.4.2 Chain-of-Custody Forms

A COC form must accompany each shipment of samples through the sampling, laboratory analysis, data validation and data storage processes. The form will ultimately become part of the project file. The COC form will be used to verify the accuracy and completeness of sample results received from the laboratories. It will also be the source of information to verify laboratory invoices and approve them for payment.

COC forms must contain information consistent with the sample bottle labels. The COCs must travel with the sample containers to the laboratory to verify samples taken, analyses requested, shipping dates, and receipt by the laboratory.

Each COC form must be signed by the EC sampler to indicate who is responsible for the sampling and the field information on the COC. Changes to a COC form must be written and initialed on the COC. Changes to the COC should not be made after shipping because of the potential for miscommunication that can occur between the field and the laboratory, and the likelihood that the change will not get recorded on the copy transmitted to the laboratory.

3.4.2.1 COC Elements

Each COC will also include the elements listed below in Table 4:

TABLE 4
Required Elements for Chain-of-Custody Forms

Element	Element	Element
project number	project name	sampling team
COC identifier	location names	sample codes
sample depths	sampling dates	sampling times
sample matrices	total no. of containers	remarks
requested anal. Methods	shipping information	name of laboratory
relinquished/received signatures with dates and times		

See Appendix A for an example of a completed COC form. Rohm and Haas reference sample matrix codes will be used to indicate all sample matrices recorded on COC forms

(see the valid reference value list on the CRG website for a complete list of sample matrix codes). Commonly used sample matrix codes are as follows:

SO	Soil
SE	Sediment
WG	Groundwater
WS	Surface water
WH	Equipment rinsate blank
RW	Rinse water (rinse water before washing equipment)
WQ	Trip blank

3.4.2.2 COC Form Identifiers

The EC must ensure that each COC form has a COC identifier, which must appear in the upper right-hand corner of the form or in the appropriate space on the form, if available (see Appendix A for examples). The identifier may be either a pre-printed, laboratory-assigned code or an identifier assigned by the EC. All identifiers assigned by the EC must conform to Rohm and Haas naming conventions maintained on the CRG website *(CRG Naming Conventions*).

3.4.3 Laboratory Sample Receipt and Logging

Upon receipt of samples from the field, the LAB will check that the COC forms correctly cover all samples submitted. Each COC form must be signed with the date and time of receipt by the LAB. Samples will be logged into the LIMS using information from the COC forms and the Work Plan. The LAB will generate unique laboratory sample codes using the sample naming conventions defined by Rohm and Haas in the document *CRG Naming Conventions* listed on the CRG website. The LAB will provide the DM with copies of the COC forms.

Questions or noted inconsistencies identified by the LAB should be addressed to the EC for resolution. The EC must follow up verbal questions with written confirmation.

3.4.4 Sample Confirmation Reports

3.4.4.1 Sample Confirmation Report Preparation

The LAB must acknowledge sample receipt in writing to the EC and the DM in the form of sample confirmation reports. Each report must include the laboratory's assigned batch identifier or sample delivery group and list for each sample received: the logged client sample identifier (i.e. proper CRG sample code or blind code), the assigned laboratory identifier, the sample date and time, the sample matrix, the requested tests, the date received in the lab, and the results due date. When possible, the report should also include the number of containers received, the acceptable holding time, and the holding time expiration date. In addition, each COC form must be included with the laboratory-assigned sample numbers filled in for each sample along with comments about any exceptions (e.g., missing or damaged containers).

3.4.4.2 Review of Sample Confirmation Reports and Data Correction

The DM will review the sample confirmation reports and identify any errors in client sample codes, requested analyses, etc., logged into the LIMS by the LAB. The DM will then communicate these errors to the LAB, and the LAB will make the necessary corrections in the LIMS. The DM will contact the EC if it can not resolve a particular problem area.

3.4.5 Updated CRG SMP EDD Submission

The EC must update and submit to the LAB the updated CRG SMP EDD(s) immediately upon review of the sample confirmation reports. The draft CRG SMP EDD will be adjusted by updating the sample codes, sample dates, sample times, sample depths, etc., using sample data recorded in the field logbooks, COC forms, and sample confirmation reports from the LAB. One SMP EDD file will be generated for each sample delivery group or "SDG" (also referred to as "laboratory lot number" or "laboratory job number") listed in the sample confirmation reports (see Section 3.5.3.1 for more detail on SMP EDD generation). Once prepared, the updated CRG SMP EDD files will be sent (via the FTP site) to the LAB for use in generating the complete three-file sets of CRG EDDs. All e-mail notifications of postings to the FTP site will be copied to Rohm and Haas and the DM.

3.4.6 Laboratory Analysis

The LAB will assure that all calibrations are current, then carry out the requested analyses and requested QC. Samples will be analyzed as specified on the accompanying COC forms and in the contract instructions.

Upon completion of the analyses, the laboratory results will be sent to the EC within the contract-specified time period in the standard deliverable form specified in the QAPP (Geomatrix Consultants, Inc., 2000). The LAB will send the three-file sets of CRG EDDs requested by Rohm and Haas (see Section 3.5.4) to the DM. The EC and the DM will separately follow-up with the LAB when their respective deliverables have not been received in a timely manner. The EC and the DM must notify Rohm and Haas when delays or problems with data quality are encountered.

3.4.7 Verification of Return of Complete Sample Data Sets

The EC and the DM will monitor the expected return dates of their respective sample data sets from the laboratories. Sample data sets that appear to be late will be noted and the LAB will be contacted by the EC and the DM for information on the progress of the analyses and expected arrival of their respective deliverables.

As data are received from the LAB, the EC and the DM will reconcile their respective data deliverables with sample tracking information or COC forms to check that all data sets have been received within the specified turn-around time and are complete. Exceptions in the data sets will be noted and resolved with the LAB, such as delayed, missing, mismatched, and invalid sample codes and analyses.

3.5 Entry and Transfer of Field, Geologic, and Analytical Data

This section describes the process used by the EC and the LAB to transfer field log information and laboratory sampling results into CRG EDDs that can be entered into the EQuIS database system.

3.5.1 Data Management Reference Material

All data management reference material will be maintained by Rohm and Haas and is available for download from the CRG website at www.rohmhaas.com\crg. This reference material includes the CRG EDD templates (listed in Table 5) and EPAR5 EDD templates (MS Excel Workbooks), the CRG valid reference value list (MS Excel file), the ELDC format files, *CRG Naming Conventions* (document), *Protocol for Labeling Field Samples* (document). Future guidance documents and updates will be posted to the CRG website by Rohm and Haas as they are available. **The EC and the LAB must refer to and use the templates and reference values in generating the CRG EDDs.** The DM will be available to advise the EC and the LAB on data entry and generation of the CRG EDDs.

Please note that all materials on the CRG website, including the CRG EDD templates, are "living documents" that will evolve with time as changes arise. The CRG website should be visited regularly to obtain up-to-date versions.

TABLE 5
Rohm and Haas CRG EDDs

EDD Format Name	Description
CRG SITE	Site
CRG LOC	Location
CRG DRA	Drilling Activity
CRG GSMP	Geologic Sample
CRG LTH	Lithology
CRG WEL	Well
CRG WSG	Well Construction
CRG DHP	Down Hole Point
CRG GWTR	Groundwater Level
CRG TBL	Water Table
CRG SMP	**Sample**
CRG TRSQC	**Test/Results with QC**
CRG BAT	**Batch**
CRG CFM	Chemical Field Measurement

EDD format names in bold are used for reporting of laboratory analytical data

3.5.2 DM Project File Transfer Protocol (FTP) Site

The DM will create and manage a project FTP site for the transfer of electronic documents and data files. All contractors may post electronic files to the FTP site for retrieval by others, including draft, updated, and final CRG SMP EDD files, CRG EDDs prepared by the EC and

the LAB, EPAR5 EDDs for review by Rohm and Haas, and copies of the EQuIS Chemistry and Geology databases. **An email must be sent notifying the recipient that the files have been posted to the FTP site**Instances of formal delivery on CDROM as specified will still be required.

3.5.3 Field and Geologic Data

3.5.3.1 Data Entry

The EC will use CRG EDD templates and valid reference values for data entry of field sample, chemical field measurement, site, location, drilling, geologic sample, lithology, well, well construction, down hole point, groundwater level, and water table data. The CRG website should be checked for updated versions of templates and valid reference value lists prior to data entry. The templates are available from the CRG website in MS Excel file format. If another format is requested, the EC should contact the DM directly. **The EC must also provide any additional data required to fulfill EPAR5 EDD requirements as directed by the DM.**

Before any data entry is begun, the EC must become familiar with the EDD field requirements and usage. Questions regarding data entry or the CRG EDD templates should be directed to the DM.

Updated CRG SMP EDD Preparation

The EC will update the draft CRG SMP EDD using sample data recorded in field logbooks, COC forms, and sample confirmation reports. This includes updating the EDD with the actual sample codes, sample dates, sample times, sample depths, etc. from the field. The SMP EDD data will be organized and split out by sample delivery group (given in the sample confirmation reports). One electronic file will be generated for each sample delivery group in CSV ASCII-text format with text fields denoted by double-quotation marks. All SMP EDD file names should follow the guidance in *CRG Naming Conventions.*

Once prepared, the EC will transmit the updated SMP EDD text file(s) to the LAB with copies sent to Rohm and Haas and the DM. It is recommended that either MS Excel or MS Access be used to update the SMP EDD data and export to the CSV ASCII-text file(s).

CRG Chemical Field Measurement (CFM) EDD Preparation

The EC will use the CRG CFM EDD template for data entry of chemical parameters measured in the field, such as water temperature, pH, oxidation-reduction potential, dissolved oxygen, conductivity, etc. As relevant, a CFM EDD should be prepared for each field event. Each CFM EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG SITE EDD Preparation

The EC will use the CRG SITE EDD template for data entry of site information including the site code, site name, site description, contact name, site address, contact phone, and contact e-mail address. An initial SITE EDD need only be prepared once and sent to the DM for each facility. The SITE EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Location (LOC) EDD Preparation

The EC will use the CRG LOC EDD template for data entry of location information, including location name, location type, location description, total depth, coordinates, coordinate system specifications, benchmarks, coordinate accuracy, ground surface elevation, and elevation specifications and accuracy. An initial LOC EDD with records for all existing locations should be prepared once and sent to the DM. Subsequent LOC EDDs should only contain records for new locations. The LOC EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Drilling Activity (DRA) EDD Preparation

The EC will use the CRG DRA EDD template for data entry of drilling and abandonment events relative to drill holes and wells. This includes starting and ending drilling depths, drill-hole diameter, drilling fluid, hammer weight and fall, and hammer lift mechanism. As relevant, a DRA EDD should be prepared for each field event. In addition to records for new drill holes/wells, the DRA EDDs may also contain additional drilling-related events for existing drill holes/wells. Each DRA EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Geologic Sample (GSMP) EDD Preparation

The EC will use the CRG GSMP EDD template for data entry of geologic samples collected for logging and geotechnical testing. This includes geologic sample codes, geologic sample starting and ending depths, sample date, sample time, sampling method, lithologic material type, liquid limit, plastic limit, shrinkage limit, flow index, plasticity index, void ratio, etc. As relevant, a GSMP EDD should be prepared for each field event. Each GSMP EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Lithology (LTH) EDD Preparation

The EC will use the CRG LTH EDD template for data entry of lithologic observations made during the logging of drill holes. This includes interval starting depth, lithologic material type, geologic unit code, moisture, permeability, consolidation, color, consistency, sorting, grain size, and odor. As relevant, a LTH EDD should be prepared for each field event. Each LTH EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Well (WEL) EDD Preparation

The EC will use the CRG WEL EDD template for data entry of well information, including well name (should be same as location name), well description, well purpose, well status, total well depth, stickup, top of casing elevation, datum elevation (measurement point), datum elevation collection method, installation date, pump information (if applicable), and head configuration. An initial WEL EDD with records for all existing wells should be prepared once and sent to the DM. Subsequent WEL EDDs should only contain records for new wells. The WEL EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Well Construction (WSG) EDD Preparation

The EC will use the CRG WSG EDD template for data entry of well construction information. For each well segment, the segment type, material type, starting and ending depths, inner and outer diameters, and thickness are entered into the template. As appropriate, the slot type, slot size, screen type, and material quantity are also entered. An initial WSG EDD with records for all existing wells should be prepared once and sent to the DM. Subsequent WSG EDDs should only contain records for new wells. The WSG EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Down Hole Point (DHP) EDD Preparation

The EC will use the CRG DHP EDD template for data entry of down hole point measurements such as pore pressure, resistivity, conductivity, gamma, caliper, and tip stress. As relevant, one or more DHP EDDs should be prepared for each field event. Due to the large number of measurements collected over the length of the drill hole, it is highly recommended that the measurements be digitally collected for download to files that can be manipulated into conformance with the DHP EDD structure. Each DHP EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Groundwater Level (GWTR) EDD Preparation

The EC will use the CRG GWTR EDD template for data entry of groundwater level measurements in wells. This includes measurement date, measurement time, depth to water level, water elevation, corrected depth to water level (if product is present), corrected elevation, and measured well depth. As relevant, a GWTR EDD should be prepared for each field event. Each GWTR EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

CRG Water Table (TBL) EDD Preparation

The EC will use the CRG TBL EDD template for data entry of water table information collected during drilling and well installation. This includes depth to water table, nature of water table measurement (unstabilized/stabilized), measurement method, reference point elevation, and aquifer. An initial TBL EDD with records for all existing drill holes and wells should be prepared once and sent to the DM. Subsequent TBL EDDs should only contain records for new drill holes and wells. The TBL EDD can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks.

Additional Data for USEPA Region 5 EDDs - Preparation

The EC will be informed by the DM if any information is required by the EPAR5 that is in addition to the data required by the CRG EDDs. The additional data can be added to the CRG EDDs or, if no field exists in the CRG EDDs, it can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format.

3.5.3.2 Field and Geologic Data QC and Transfer

The EC will QC all prepared CRG EDDs and additional EPAR5 data relevant to the field event using the ELDC in conjunction with Rohm and Haas CRG format files and valid reference values. The EC will correct errors found and send the CRG EDDs and EPAR5 data to the DM for data loading. As previously indicated, the CRG EDDs and EPAR5 data can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format with text fields denoted by double-quotation marks. All CRG EDD file names should follow the guidance in *CRG Naming Conventions*.

3.5.3.3 Blind Sample Key Transfer

The EC will prepare a blind sample key for the sampling event that cross-references the blind sample codes with the proper CRG field duplicate sample codes. **The EC will then forward<u>BY E-MAIL ONLY</u>a copy of this key to the DM at the conclusion of the sampling event.**

3.5.3.4 Site Map Transfer

The EC will provide the DM (via the FTP site) with an electronic site map showing all locations (soil sampling locations, surface water and sediment locations, monitoring wells and temporary wells, etc.). This map must be in the coordinate system in which survey results are reported or utilized. The site map must be supplied in either AutoCAD Release 14 digital exchange format (DXF extension), or AutoCAD Release 14 drawing format (DWG extension). For the Cincinnati site, an AutoCAD site map has been generated and subsequently updated by Geomatrix Consultants, Inc. Therefore, a new site map is not necessary for this project.

3.5.3.5 Data Correction/Updates

Data corrections or updates identified by the EC after the CRG EDDs and additional EPAR5 data have been sent to the DM and loaded into the EQuIS database system will be made using update CRG EDDs (and EPAR5 data files if directed by the DM). The EC will use the CRG EDD templates to create files that contain only those records for which there are corrections or updates. In various update files, each record will have only the required "key" fields (for loading) and the corrected or updated fields populated. The remaining fields will be left null (empty).

Once prepared, the EC will QC the update files using ELDC and correct any errors prior to sending the files to the DM (via the FTP site). The update files can be transferred to the DM in MS Excel 97, MS Access 97, or CSV ASCII-text file format. All update file names should follow the guidance in *CRG Naming Conventions*.

3.5.4 Laboratory Analytical Data

3.5.4.1 Data Entry

The LAB will use CRG EDD templates and valid reference values for augmenting field sample data and for preparation of laboratory sample, test, result, QC result, and laboratory batch data. The CRG website should be checked for updated versions of templates and valid reference value lists prior to data preparation. These templates are available from the CRG website in MS Excel 97 file format. If another format is requested, the LAB should

contact the DM directly. **The LAB must also provide any additional data required to fulfill EPAR5 EDD requirements as directed by the DM.**

Before any data entry is begun, the LAB must become familiar with the EDD field requirements and usage. Questions regarding data entry or the CRG EDD templates should be directed to the DM.

CRG SMP EDD Preparation

The LAB will use the updated CRG SMP EDD(s) supplied by the EC to update specific fields (e.g., sample receipt date) for all field samples, as well as add records for any laboratory-generated QC samples. The SMP EDDs supplied by the EC will be organized by sample delivery group. After modification by the LAB, each SMP EDD will be saved/ exported as a CSV ASCII-text file with double quotes enclosing all text values.

CRG Test/Results with QC Data (TRSQC) EDD Preparation

The LAB will use the CRG TRSQC EDD template for mapping of analytical test method names, measured results, and QC data from the LIMS to the EDD structure. This includes enter the container designations (container type codes) into the field container_id. Each TRSQC EDD must contain only those results for samples listed in the corresponding CRG SMP EDD. Each TRSQC EDD will be saved/exported as a CSV ASCII-text file with double quotes enclosing all text values.

CRG Batch (BAT) EDD Preparation

The LAB will use the CRG BAT EDD template for mapping of analytical test batch data from the LIMS to the EDD structure. Each BAT EDD must contain records for each sample and corresponding analytical method and test type for which results are reported in the corresponding CRG TRSQC EDD; please note that the analysis dates and times given in the BAT EDD must match those in corresponding TRSQC EDD. In addition, all samples in the BAT EDD must appear in the corresponding CRG SMP EDD. Each BAT EDD will be saved/exported as a CSV ASCII-text file with double quotes enclosing all text values.

3.5.4.2 LAB Analytical Data QC and Transfer

In addition to conducting standard QC practices for all laboratory deliverables, the LAB will QC all three-file sets of CRG EDDs using the ELDC in conjunction with the Rohm and Haas format files and reference values. Any errors in the EDDs identified by the ELDC must be corrected by the LAB prior to shipment to the DM. The EDDs will be sent by posting to the FTP site and by shipment on CDROM in CSV ASCII-text file format with double quotes enclosing all text values. The ELDC is available from Earthsoft, Inc.

3.5.4.3 Data Check-in and QC

Upon receipt from the LAB, the EC will check the standard deliverables for completeness against sample tracking information and project instructions. This includes logging the receipt date and assigned document control numbers, and physically checking for missing information or inconsistencies. The QC data will be reviewed for data quality issues.

Upon receipt from the LAB, the DM will check the CRG EDDs for completeness (including result counts for all TRSQC EDDs). The SMP EDDs, TRSQC EDDs, and BAT EDDs will also be checked for errors in the sample codes.

Errors (mismatched records, missing results, invalid results, etc.) identified by the EC and the DM will be communicated to the LAB for data revision and CRG EDD regeneration.

3.5.4.4 LAB Data Correction

The LAB will make corrections to the standard deliverable and the three-file sets of CRG EDDs for errors (mismatched records, missing results, invalid results, etc.) identified by the EC and the DM upon check-in and QC. Once corrections have been made, the standard deliverable and/or the CRG EDDs will be regenerated. The regenerated CRG EDDs will be checked using the ELDC; any identified errors will be corrected prior to being sent to the DM (via the FTP site).

3.5.4.5 Data Validation and Transfer

Once the LAB deliverables are confirmed to be complete and error-free, the EC will oversee the data validation as specified in the QAPP (Geomatrix Consultants, Inc., 2000). When available, the data validation report will be sent by the EC to the DM. **The DM must use the data validation report to record all validator qualifiers (changes from laboratory qualifiers) in the validator qualifier field in the TRSQC EDDs.**

3.6 Data Loading

3.6.1 Pre-Load Procedures and Data QC

The DM will check all CRG EDDs and additional EPAR5 data received from the EC for conformance with the required EDD specifications and database integrity using the EQuIS import utility checking routine or other tools. Any deviations or errors (invalid codes, chemicals, etc.) identified by the DM will be resolved with the assistance of the EC and the LAB to attain final CRG EDDs (and ultimately EPAR5 EDDs). Major data problems may require correction by the EC or the LAB. If only minor adjustments are required, the DM will make the corrections and notify the respective providers.

Once corrected, the DM will replace the blind sample codes for field duplicate samples in the analytical CRG EDDs with the proper CRG sample codes using the blind sample code key sent by the EC. Upon review of the data validation report from the EC, the DM will incorporate validator qualifiers into the CRG TRSQC EDDs. The DM will consult with the EC for clarification on the validator qualifiers as needed.

In addition, the DM will use the electronic site map provided by the EC to check that coordinates provided for locations listed in the CRG LOC EDD represent the positions plotted on the site map.

3.6.2 Data Loading

When all QC checks are completed with no apparent errors, the DM will upload the CRG EDD data into the EQuIS database system. Any errors identified during loading will be

resolved with the assistance of the EC and the LAB. Again, if only minor adjustments are required, the DM will make the corrections to the CRG EDDs and reload to avoid unnecessary delays. The additional EPAR5 data will be stored either in available tables/ fields in the EQuIS database system or in a separate MS Access database (to be linked to queries for generating the EPAR5 EDDs).

3.6.3 Post-Load Data Reports and QC

The DM will produce an electronic analytical data inventory report that will be used by the DM to verify that the analytical CRG EDD data correctly loaded into the EQuIS Chemistry database. The DM will notify the EC and the LAB of CRG EDDs that have errors and will instruct the LAB to correct them. (Obvious minor errors may be corrected and documented by the DM to avoid unnecessary delays.)

Once the data has been successfully loaded and all errors have been resolved, the DM will post the final CRG EDDs to the FTP site for retrieval by Rohm and Haas.

3.7 Data Deliverables

3.7.1 Rohm and Haas CRG EDDs

The following describes the file formats, media, and methods of shipment for submission of data to Rohm and Haas. Unless otherwise requested, the DM will submit the final CRG EDDs to the Rohm and Haas at the same time the EC submits the corresponding hard copy report deliverables.

3.7.1.1 File Formats

The CRG EDDs will be submitted in CSV ASCII-text file format with text values enclosed by double quotes (").

3.7.1.2 Media

The CRG EDDs files will be posted to the FTP site in compressed form (WinZip compatible). Upon request, the CRG EDDs will be provided in uncompressed form on CDROM.

3.7.1.3 Methods of Shipment

If a CDROM is requested, all CRG EDDs will be sent to Rohm and Haas at the following shipping address:

Attn: Peter Palena
Rohm and Haas Company
Engineering Division
Route 413 and State Road
Bristol, PA 19007

3.7.1.4 Requests for EQuIS databases

Upon request, the DM will provide Rohm and Haas with copies of the EQuIS Chemistry and Geology databases, either by posting to the FTP site or by shipping on CDROM.

3.7.2 USEPA Region 5 EDDs

The following describes the procedures and specifications that will be used by the DM to prepare and submit EPAR5 EDDs, as well as manage modifications to the EPAR5 EDD specifications. The EPAR5 EDDs are listed below in Table 6.

TABLE 6
USEPA Region 5 EDDs

EDD Format Name	Description
ERAR5SITE_v1	Site
EPAR5LOC_v1	Location
EPAR5DRA_v1	Drilling Activity
EPAR5GSMP_v1	Geology Samples
EPAR5LTH_v1	Lithology
EPAR5WEL_v1	Well
EPAR5WSG_v1	Well Construction
EPAR5DHP_v1	Down Hole Point Data
EPAR5GWTR_v1	Water Level
EPAR5TBL_v1	Water Table
EPAR5SMP_v1	**Chemistry Sample**
EPAR5TRSQC_v1	**Chemistry Test/Result with QC Data**
EPAR5BAT_v1	**Batch**
EPAR5CFM_v1	Chemical Field Measurement

EDD format names in bold are used for reporting of laboratory analytical data

3.7.2.1 Region 5 EDD Preparation

EDD Generation and QC

The DM will generate the EPAR5 EDDs relevant to the field event by querying the CRG EDD data loaded into the EQuIS database system and any additional EPAR5 data, then exporting the data in the EPAR5 EDD formats. Once generated, the EDD files will be checked using the ELDC with the EPAR5 requirements and valid values. All errors, conflicts, and new valid values identified by the ELDC will be handled as discussed in the following subsections. All EPAR5 EDDs will be sent (via FTP site) to Rohm and Haas for review.

Resolution of Data Errors and Conflicts

The DM will resolve any errors or data conflicts identified by the ELDC with the assistance of the EC, the LAB, and Rohm and Haas. If possible, the DM will make any necessary corrections required to meet the EPAR5 EDD specifications. If warranted and agreed to by Rohm and Haas, these errors or conflicts will be communicated to the USEPA remedial project manager (RPM) or his/her designee to facilitate a satisfactory resolution.

Notification of New Valid Values

Prior to submitting the EPAR5 EDDs, the DM will prepare and send the USEPA RPM an e-mail requesting the approval of all new valid values identified by the ELDC. Depending upon the outcome of the request, the EPAR5 EDDs may require revision prior to submission.

3.7.2.2 Region 5 EDD Submission

The DM will submit the final EPAR5 EDDs to the USEPA at the same time the EC submits the corresponding hard copy report deliverables. The following describes the file formats, media, and methods of shipment for the EPAR5 EDDs.

Cover Letter

For each set of EPAR5 EDDs, the DM will prepare a cover letter listing the specific study site, a contact for technical questions, EDD file names, exceptions to the EDD formats, EDDs not relevant to the field event, new valid values, and notification of any previously submitted data present within the EDDs (USEPA, 2001). If any resubmitted data are included, the reason for the resubmission and guidance on how to handle the original data (e.g., delete original data from database) must also be stated in the cover letter.

File Formats

The EPAR5 EDDs will be submitted in CSV ASCII-text file format with text values enclosed by double quotes (").

Media

Unless e-mail submissions have been pre-arranged with the USEPA RPM or his/her designee, the EPAR5 EDDs and an ASCII-text file version of the cover letter will be provided in uncompressed form on CDROM, 3.5-inch IBM-compatible diskettes, or 100 megabyte (MB)/250 MB Zip® disks. The media will be labeled with the site name (Morton International Inc. - Reading Facility), project code and date of transfer.

Methods of Shipment

All EPAR5 EDD submissions will be sent on behalf of the USEPA to Booz Allen Hamilton, Inc., at the following shipping address (for disk submission) or e-mail address:

Attn: Kevin Luck
Booz Allen Hamilton, Inc.
55 West Monroe Street
Suite 2640
Chicago, IL 60603

or

luck_kevin@bah.com

3.7.2.3 Management of Modifications – USEPA Region 5 EDD Specifications

The USEPA RPM or his/her designee will notify Rohm and Haas and the DM of all modifications to the EPAR5 EDD specifications, and will discuss the schedule for implementing said modifications. The DM will ascertain and discuss with Rohm and Haas the impacts of such modifications on data collection and data entry, then discuss with Rohm

and Haas the best course of action for rollout of the changes. It is assumed that this course of action will include the DM assisting Rohm and Haas in making appropriate modifications to templates, reference values, and guidance documents, posting them to the CRG website, and notifying the EC and LAB to check the website for the modified documents.

4. Data Management Technology, Database Administration, and Records Management

4.1 Data Management Technology

The database maintained by the DM for the Cincinnati site will be Earthsoft's EQuIS database system (version 3.7). The DM currently owns licenses for EQuIS Geology and EQuIS Chemistry modules. These modules and their databases will be the main focal point of the data management system. The applications are located in the Herndon (WDC) office. For the Paterson site, the master database will be maintained by the Database Manager in the WDC office. The EQuIS database system consists of *relational databases* with front-end data entry and querying tools. A relational database is a collection of tables, each representing a certain type or entity of data.

4.2 Database Administration

4.2.1 User Access and Security

The basic goals of data security are (1) to protect the data from unauthorized use, (2) to permit necessary access while protecting against inadvertent changes by authorized users, and (3) to segregate the activities of various data users. The DM will manage the security access usernames, access rights, and passwords.

4.2.2 File Backup

As electronic data is received and uploaded, backup copies of the EQuIS database will be stored on read-only CD-ROMs and on the LAN. The LAN files are backed up daily by the DM IT staff. The CD back-ups will be generated and maintained by DM. Backups will be performed on a weekly basis, or more frequently as deemed necessary by the DM.

4.3 Records Management

Field logbooks, field data, boring and well construction logs, COC forms, laboratory hard copy and electronic deliverables, data listings, data evaluation reports, correspondence, and other documentation will be maintained by the EC in a project file.

5. References

Geomatrix Consultants, Inc., 2000. *Quality Assurance Project Plan, Facility Investigation, RCRA §3013 Administrative Order, Morton International, Inc. Facility, [EPA ID No. OHD 000 724 138], Reading, Ohio.* November 2000

USEPA, 2001. *Electronic Data Deliverable (EDD) Specification Manual, Version 1.05, USEPA Region 5.* June 2001.

Appendix A
Completed Chain-of-Custody Examples

Important Chain-of-Custody Elements

Please refer to numbered items on example chain-of-custody forms on the next two pages. These elements represent a subset of the required chain-of-custody elements described in Section 3.4.2.

1. Enter the proper **shipping contact** (for report) for projects in shipping info portion of the form.
2. The **point of contact** (name and phone number) **for sample issues** (decision making; Project Manger or designee) should be listed in the "comments" or "special instructions" portion of the chain-of-custody when appropriate.
3. The **chain-of-custody identifier** must be listed in the appropriate space provided on the form or in upper right hand corner of the form. Use either the pre-printed, lab-assigned identifier shown in Figure A-1, if available, or Rohm and Haas chain-of-custody identifier shown in Figure A-2 (see CRG website for Rohm and Haas naming convention for chain-of-custody identifiers).
4. The appropriate **sample matrix codes** (see valid reference value list on CRG website) must be used in the matrix field of the form. Commonly used codes are listed below:

   SO for Soil
   SE for Sediment
   WG for Groundwater
   WS for Surface water
   WH for Equipment rinsate blank
   WQ for Trip blank

5. The lines on which the **matrix spike and matrix spike duplicate sample codes** and their **associated normal sample codes** are listed must be **marked by large asterisks** (before the lines). Then, at the bottom of the form, an asterisk and the following words must be written EXACTLY: "*These three samples are for lab QC." This will indicate to the lab that the two additional volumes are for spike analysis and not normal analysis.

FIGURE A-1
Example of Completed Chain-of-Custody Form with Pre-Printed, Lab-Assigned Chain-of-Custody Identifier

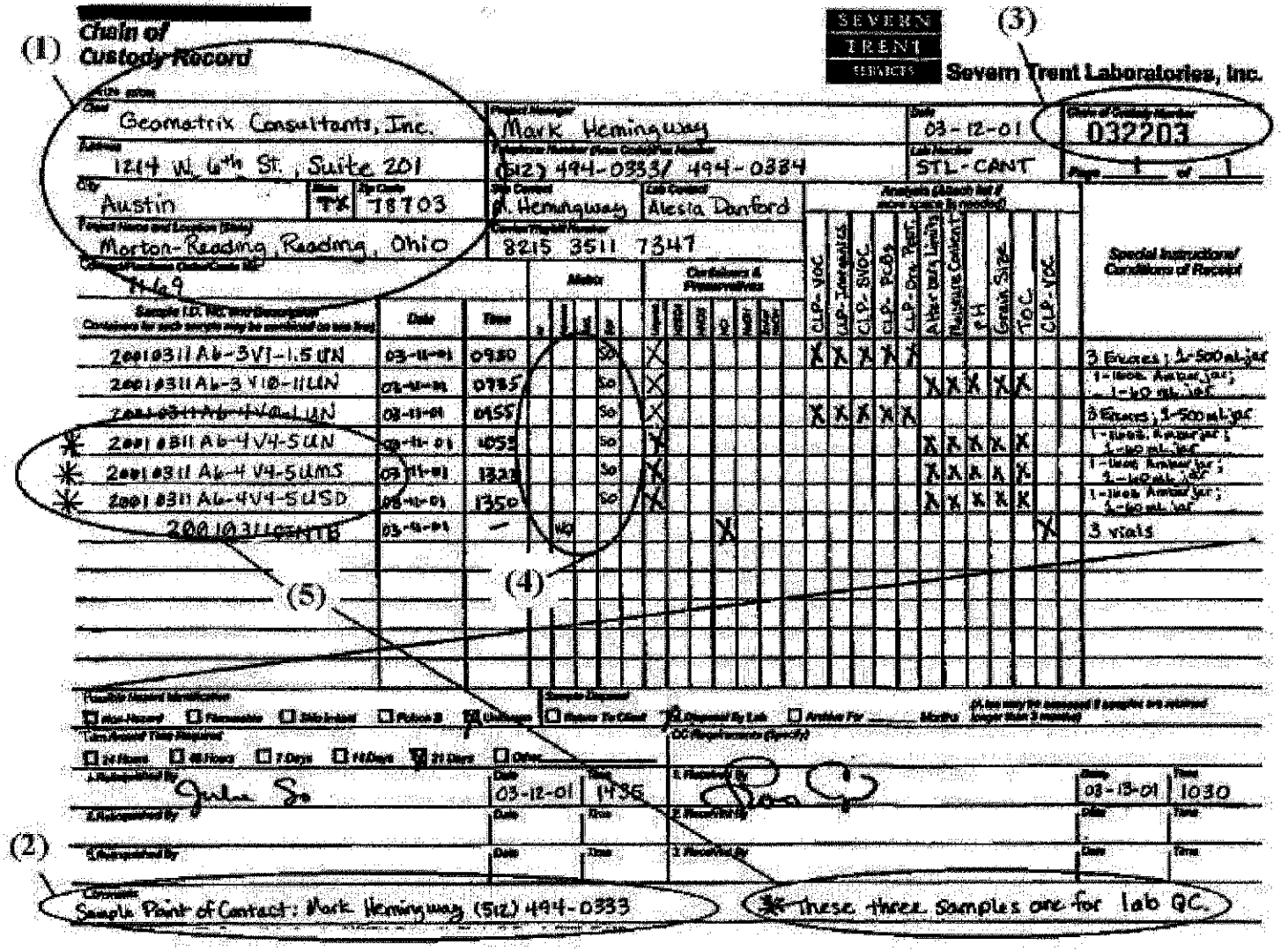
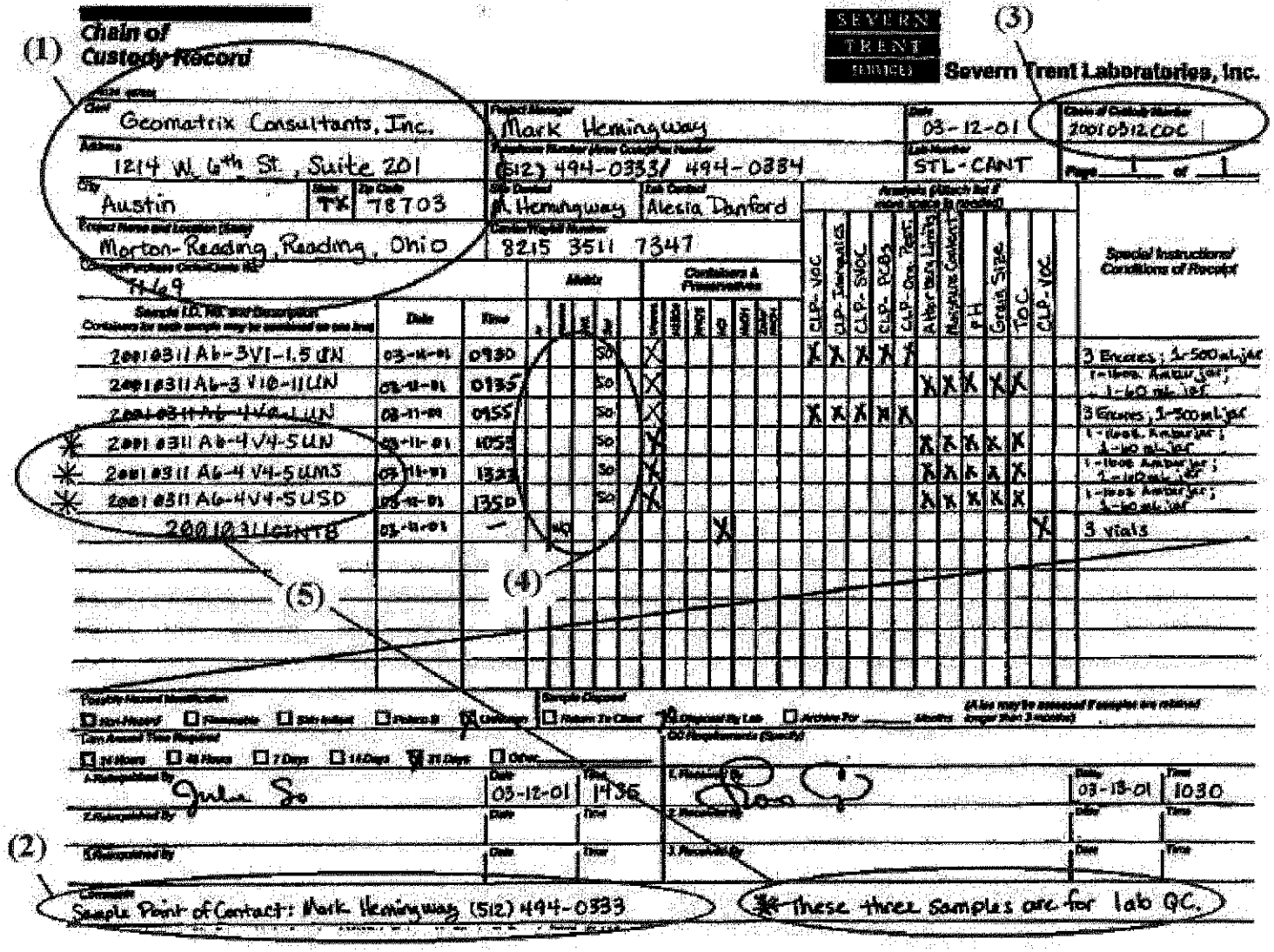


FIGURE A-2
Example of Completed Chain-of-Custody Form with Rohm and Haas Chain-of-Custody Identifier



June 20, 2005

179405.10.TC

Ms. Mirtha Capiro
Project Coordinator
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, DE-9J
Chicago, IL 60604-3590

Subject: **Revised - Combined Correction Resubmittal/Original Submittal**
Morton International, Inc., Reading, Ohio Site
EPA ID No. OHD 000 724 138

Dear Ms. Capiro:

Please find attached the revised version of the combined correction resubmittal/original submittal electronic data deliverable (EDD) files for the Morton International, Inc., Reading, Ohio site submitted to United States Environmental Protection Agency (USEPA) Region 5 on behalf of Rohm and Haas Company. First submitted to USEPA on May 13, 2005, the combined correction resubmittal/original submittal addressed the outstanding USEPA comments that were discussed during the conference call on April 29, 2005. Both original and revised versions of the combined submittal EDDs cover all available historical data prior to the October 2002 sampling event (test case), as well as all available data collected after the October 2002 event (includes Supplemental Investigation). This revised version of the combined submittal resolves the outstanding Electronic Data Processor (EDP) error messages relating to the EPAR5TRSQC_v1 EDD, and provides corrected Universal Transverse Mercator (UTM) coordinates for several stations in the EPAR5LOC_v1 EDD.

With the exception of the initial submittal base map and EPAR5SITE_v1 EDD file, **the combined submittal EDD files replace those submitted prior to the final test case data submittal** (dated March 2, 2004).

Data Submission File Names

The following EDDs comprise this revised version of the combined submittal (same file names used as instructed by the *Electronic Data Deliverable Specification Manual, Version 1.1,* USEPA Region 5, June 2003).

CIN20050513.OHD000724138.EPAR5LOC_v1.csv*
CIN20050513.OHD000724138.EPAR5DRA_v1.csv
CIN20050513.OHD000724138.EPAR5DHP_v1.csv
CIN20050513.OHD000724138.EPAR5LTH_v1.csv
CIN20050513.OHD000724138.EPAR5WEL_v1.csv
CIN20050513.OHD000724138.EPAR5WSG_v1.csv
CIN20050513.OHD000724138.EPAR5GWTR_v1.csv
CIN20050513.OHD000724138.EPAR5TBL_v1.csv
CIN20050513.OHD000724138.EPAR5SMP_v1.csv
CIN20050513.OHD000724138.EPAR5TRSQC_v1.csv*
CIN20050513.OHD000724138.EPAR5BAT_v1.csv

*revised

Excluded EDD File Formats

EDDs excluded from the combined submittal are listed as follows.

Base Map	(previously submitted)
EPAR5SITE_v1	(previously submitted)
EPAR5GSMP_v1	(not relevant)
EPAR5CFM_v1	(not relevant)
EPAR5EIW_v1	(no data available)

Format Exceptions

The EPAR5WEL_v1 EDD record for one of the historical wells (sys_loc_code="RECOVWELL") does not have data available for four required fields (datum_value, datum_unit, datum_desc, and start_date). Aside from this particular exception, fields not populated in the EDDs were either not relevant to the data under submission, or had no available data.

New Valid Values

The following new valid values are requested from USEPA Region 5 and are required by the pertinent EDDs submitted.

EPAR5LOC

Field	New Valid Value	Description
coord_sys_desc	UTM Zone 16	UNIVERSAL TRANSVERSE MERCATOR ZONE 16

EPAR5DHP_v1

Field	New Valid Value	Description
param	PID	PHOTOIONIZATION DETECTOR

EPAR5SMP_v1

Field	New Valid Value	Description
sampling_company_code	STL-CANT	SEVERN TRENT LABORATORIES – NORTH CANTON, OHIO

EPAR5TRSQC_v1

Field	New Valid Value	Description
lab_anl_method_name	E300.0A	DETERMINATION OF INORGANIC ANIONS IN WATER BY ION CHROMATOGRAPHY
lab_anl_method_name	SM18 3500-FE D	IRON BY PHENANTHROLINE METHOD
lab_anl_method_name	SW8280A	POLYCHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS
prep_method	SW3060A	DETERMINATION OF INORGANIC ANIONS IN WATER BY ION CHROMATOGRAPHY
prep_method	SW3510C	SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION
prep_method	SW3520C	CONTINUOUS LIQUID-LIQUID EXTRACTION
prep_method	SW3540C	SOXHLET EXTRACTION
prep_method	SW5035	PURGE AND TRAP (METHANOL EXTRACTION)
lab_name_code	STL-CANT	SEVERN TRENT LABORATORIES – NORTH CANTON, OHIO
lab_name_code	STL-SACR	SEVERN TRENT LABORATORIES – WEST SACRAMENTO, CALIFORNIA
cas_rn	846-9030A	ACID SOLUABLE SULFIDE
cas_rn	34465-46-8	TOTAL HEXACHLORODIBENZO-P-DIOXIN
cas_rn	55684-94-1	TOTAL HEXACHLORODIBENZOFURAN
cas_rn	36088-22-9	TOTAL PENTACHLORODIBENZO-P-DIOXIN
cas_rn	30402-15-4	TOTAL PENTACHLORODIBENZOFURAN
cas_rn	41903-57-5	TOTAL TETRACHLORODIBENZO-P-DIOXIN
cas_rn	846-7.3.3.2	REACTIVE CYANIDE
cas_rn	846-7.3.4.2	REACTIVE SULFIDE
subsample_amount_unit	g	grams
subsample_amount_unit	ul	microliters
final_volume_unit	g	grams
final_volume_unit	ul	microliters

EPAR5BAT_v1

Field	New Valid Value	Description
lab_anl_method_name	E300.0A	DETERMINATION OF INORGANIC ANIONS IN

		WATER BY ION CHROMATOGRAPHY

Proposed Acceptable Values

The following is proposed as an acceptable value for the field listed. It is required by the pertinent EDD submitted.

EPAR5TRSQC_v1

Field	Value	Comment
result_value	>180	Associated with results for flashpoint.

Technical Contact

Technical questions regarding this data submission should be directed to Jennifer Telford/CH2M HILL at (703) 471-6405 ext. 4336.

Sincerely,

CH2M HILL

Jennifer Telford
Data Manager

WDC\RHCIN_EPAcoverletter_20050520.doc
Attachments
C: Carl Coker/Rohm and Haas
Paul Cichy/Rohm and Haas
Brendan Finnegan/Booz Allen & Hamilton Inc.
Leah Chibe/Booz Allen & Hamilton Inc.

Mirtha Capiro /R5/USEPA/US To
01/19/2005 11:11 AM Subject Complete list of clarification items -- Rohm & Haas facility

Carl,

For your convenience, I am attaching a file with the complete list of clarification items regarding the electronic data deliverables from Rohm & Haas facility. The attached list also includes some minor editorial corrections for clarity. Please let me know whether the call being scheduled for tomorrow would be helpful. I would need to have some indication from you this afternoon as to whether we are proceeding with the call, so that I could cancel the conference line reservation if necessary. Thanks.

clarification items.wpd

Mirtha Cápiro
Environmental Scientist
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd. (DE-9J)
Chicago, IL 60604
312/ 886-7567
fax 312/ 353-4342
capiro.mirtha@epa.gov

Rohm & Haas facility
OHD 000 724 138

CLARIFICATION ITEMS

ITEM 1 - The SMP file has the following locations listed that are missing corresponding information in the LOC file. The TRSQC file refers to the same locations. Is location data available?
SEWER
POLYTANK
ROLLOFF
RECOVW

ITEM 2 - "STL-CANT" can be added to the valid values list, but this requires the lab's full name, city, and state.

ITEM 3 - Receiving "qc_spike_measured should not be less than qc_original_conc" error for some rows in the TRSQC file when checked using the EQuIS Electronic Data Processor (EDP). Please check to ensure this data is correct.

ITEM 4 - Please supply a description for the following material_type codes (LTH file):
G
CONCRETE
GS
SM-ML

ITEM 5 - Please supply a description for lab_prep_method_name SW8280.

ITEM 6 - The Batch file has many parent sample code errors, but it may just need some formatting changes. Please provide suggestions for addressing this problem.

ITEM 7 - Please provide all data related to these locations:
UAW26-70
UAW27-50
LAW05-60
LAW05-150
LAW12-60
STR12
STR13
STR14
DP28 through DP79

ITEM 8 - Please provide data for the "geo_unit_code" field(s) based on the interpretation of the hydrogeology from the Facility Investigation Report (refer to cross sections from Figures 5-3 through 5-11).

In addition, further discussions may be necessary in the immediate future pending the results of the attempted merge of data.

Mirtha Capiro /R5/USEPA/US
01/18/2005 02:15 PM

To Carl J Coker <CCoker@rohmhaas.com>
cc finnegan_brendan@bah.com, chibe_leah@bah.com, keil_nicholas@bah.com
bcc

Subject Clarification items -- Rohm & Haas facility data

Carl,

Below is a list of clarification items concerning the data deliverables that Rohm and Haas, former Morton International, has submitted to EPA to this date. Please let me know if you would like for us to proceed with the plans for a call on Thursday, January 20th.

ITEM 1 - The SMP file has the following locations listed that are missing corresponding information in the LOC file. The TRSQC file refers to the same locations. Is location data available?
SEWER
POLYTANK
ROLLOFF
RECOVW

ITEM 2 - "STL-CANT" can be added to the valid values list, but this requires the lab's full name, city, and state.

ITEM 3 - Receiving "qc_spike_measured" should not be less than "qc_original_conc" error for some rows in the TRSQC file.

ITEM 4 - Please supply a description for the following material_type codes (LTH file):
G
CONCRETE
GS
SM-ML

ITEM 5 - Please supply a description for lab_prep_method_name SW8280.

ITEM 6 - The Batch file has many errors, but it may just need some formatting changes. Please provide suggestions for addressing this problem.

ITEM 7 - Please provide all data related to these locations:
UAW26-70
UAW27-50
LAW05-60
LAW05-150
LAW12-60
STR12
STR13
STR14
DP28 through DP79

In addition, further discussions may be necessary in the immediate future pending the results of the attempted merge of data.

Thanks.

Mirtha Cápiro
Environmental Scientist
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd. (DE-9J)
Chicago, IL 60604
312/ 886-7567
fax 312/ 353-4342
capiro.mirtha@epa.gov

CH2M HILL
13921 Park Center Road
Suite 600
Herndon, VA 20171
Tel 703.471.1441
Fax 703.471.1508

CH2MHILL

March 2, 2004

179405.10.TC

Ms. Mirtha Capiro
Project Coordinator
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, DE-9J
Chicago, IL 60604-3590

Subject: **Final Test Case Data Submission**
Morton International, Inc., Reading, Ohio Site
EPA ID No. OHD 000 724 138

Dear Ms. Capiro:

Please find enclosed the final electronic data deliverable (EDD) files for the Morton International, Inc., Reading, Ohio site submitted on behalf of Rohm and Haas Company. **This submission includes two EDD files (test/results [TRSQC] and batch [BAT]) that have been revised, based in part on the rejection of two requested valid values (see discussion under "New Valid Values" below). These EDD files have been revised since those submitted electronically on December 31, 2003.** As before, the submission covers the data set referred to as the "test case" during our meeting on January 22, 2003, in United States Environmental Protection Agency (USEPA) Region 5 offices, and **does not include any data submitted prior to December 31, 2003.**

Data Submission File Names

The following EDDs comprise this data submission.

CIN20040302.OHD000724138.EPAR5LOC_v1.csv
CIN20040302.OHD000724138.EPAR5SMP_v1.csv
CIN20040302.OHD000724138.EPAR5TRSQC_v1.csv*
CIN20040302.OHD000724138.EPAR5BAT_v1.csv*
CIN20040302.OHD000724138.EPAR5CFM_v1.csv
CIN20040302.OHD000724138.EPAR5DRA_v1.csv
CIN20040302.OHD000724138.EPAR5LTH_v1.csv
CIN20040302.OHD000724138.EPAR5WEL_v1.csv
CIN20040302.OHD000724138.EPAR5WSG_v1.csv
CIN20040302.OHD000724138.EPAR5GWTR_v1.csv

CIN20040302.OHD000724138.EPAR5TBL_v1.csv

*revised

Log files generated by the Electronic Laboratory Data Checker (ELDC; commercial version used for both the Chemistry and Geology EDDs) for each EDD are also included.

Excluded EDD File Formats

EDDs that were not relevant to the field event associated with this data submission, or that were previously submitted, are associated with the following file formats.

EPAR5SITE_v1	(previously submitted)
EPAR5GSMP_v1	(not relevant)
EPAR5DHP_v1	(not relevant)

Format Exceptions

Attachment 1 documents the EDD fields that were either not relevant to the data set under submission, or for which no data was available.

Important Notes

- As per the November 6, 2003, meeting between USEPA Region 5 and Booz Allen & Hamilton Inc., the enclosed EPAR5TRSQC EDD will be accepted with the following four EDD Data Validation Summary Report warnings. These warnings were received using the Integrity Tool (version 1.5) provided by Booz Allen & Hamilton Inc. As requested by USEPA Region 5, the warnings related to QC spike recovery and QC duplicate spike recovery have been noted in the pertinent records within the EPAR5TRSQC EDD.

    1. Detection flag = "Y" yet result value is null
    2. Organic samples with lab qualifier = B and reportable result = Yes
    3. Samples with QC spike recovery less than 0 or greater than 150
    4. Samples with QC dup spike recovery less than 0 or greater than 150

- There are 126 ELDC warnings associated with records having single quotes. These single quotes are correctly associated with the following chemical names.

    P,P'-DDD
    P,P'-DDE
    P,P'-DDT

- The EPAR5LOC EDD includes only those locations newly installed in October 2002 or not previously submitted to USEPA Region 5. There are data within the EPAR5SMP, EPAR5TRSQC, EPAR5BAT, and EPAR5CFM EDDs for locations not included in the EPAR5LOC EDD. These locations were included in a previous submission to USEPA Region 5 made directly by Rohm and Haas Company.
- The location data provided in the EPAR5LOC EDD follows USEPA Region 5 guidelines for wells less than one year old since this EDD was prepared within one year of the well installation dates (no well construction or datum information included).

New Valid Values

Booz Allen & Hamilton Inc. indicated via email on January 8, 2004, that the following new valid values requested by CH2M HILL have been accepted. These values are required by the pertinent EDDs submitted.

Accepted

EPAR5TRSQC

Field	New Valid Value
prep_method	SW3520C
lab_qualifiers	BJ
lab_qualifiers	BJE
lab_qualifiers	JB
lab_qualifiers	JE
lab_name_code	STL-CANT

EPAR5CFM

Field	New Valid Value
param_unit	uS/cm

Booz Allen & Hamilton Inc. also indicated that two of the original valid values requested were rejected on the basis of the asterisk (listed below). Upon consultation with a chemist on staff, Booz Allen & Hamilton Inc. concluded that the asterisk is not a standard qualifier and is not applied in any consistent way by laboratories. This topic was subsequently discussed with Rohm and Haas Company and the North Canton laboratory of Severn Trent Laboratories (STL), and the conclusion reached was that the asterisks should be removed from the lab_qualifiers field. For the particular records in question, the asterisks were intended to convey surrogate results outside of control limits, which are specified separately in the quality control status fields of the EPAR5TRSQC EDD. The data was modified accordingly and, with the addition of three missing records, the EPAR5TRSQC file was regenerated and checked using the ELDC and the Integrity Tool provided by Booz Allen & Hamilton Inc. The EPAR5BAT EDD file was also regenerated and checked due to the addition of three missing records.

Rejected

EPAR5TRSQC

Field	New Valid Value
lab_qualifiers	*
lab_qualifiers	*D

Technical Contact

Technical questions regarding this data submission should be directed to Jen Telford/CH2M HILL at (703) 471-6405 ext. 4336.

Sincerely,

CH2M HILL

Jennifer Telford

Jennifer Telford
Data Manager

WDC\RHCIN_EPAcoverletter_20040227.doc
Enclosures
c: Carl Coker/Rohm and Haas
Paul Cichy/Rohm and Haas
Eric Walker/Rohm and Haas
Kevin Luck/Booz Allen & Hamilton Inc.
Joel Wipf/CH2M HILL

Attachment 1

LOC – Fields not populated

Field	Reason
loc_name	Not available from data provider.
loc_desc	Not available from data provider.
loc_purpose	Not available from data provider.
loc_county_code	Not available from data provider.
loc_district_code	Not available from data provider.
loc_state_code	Not available from data provider.
loc_major_basin	Not available from data provider.
loc_minor_basin	Not available from data provider.
depth_to_bedrock	Not available from data provider or not applicable to data set.
depth_to_top_of_screen	Not applicable; EDDs prepared when wells were less than 1 year old.
depth_to_bottom_of_screen	Not applicable; EDDs prepared when wells were less than 1 year old.
top_casing_elev	Not applicable; EDDs prepared when wells were less than 1 year old.
datum_value	Not applicable; EDDs prepared when wells were less than 1 year old.
datum_unit	Not applicable; EDDs prepared when wells were less than 1 year old.
datum_collect_method_code	Not applicable; EDDs prepared when wells were less than 1 year old.
datum_desc	Not applicable; EDDs prepared when wells were less than 1 year old.
start_date	Not applicable; EDDs prepared when wells were less than 1 year old.

SMP – Fields not populated

Field	Reason
end_depth	Not applicable to data set.
sent_to_lab_date	Not available from data provider.
sampler	Not available from data provider.
sampling_technique	Not available from data provider.
composite_desc	Not applicable; no composite samples.

TRSQC – Fields not populated

Field	Reason
leachate_method	Not applicable; no leachate results.
leachate_date	Not applicable; no leachate results.
leachate_time	Not applicable; no leachate results.
percent_moisture	Not available from data provider.
comment	Not available from data provider or not applicable to data set.
preservative	Not available from data provider.
result_error_delta	Not available from data provider.
validator_qualifiers	Not applicable; validation not required for particular data set comprising EDD submission.
qc_original_conc	Not available from data provider.
qc_dup_original_conc	Not available from data provider.

BAT – All requested fields populated

CFM – Fields not populated

Field	Reason
measurement_method	Not available from data provider.
param_value_background	Not available from data provider.
remark	Not available from data provider or not applicable to data set.
subcontractor_name_code	Not available from data provider.
worker_name	Not available from data provider.
instrument_id	Not available from data provider.
calibration_date	Not available from data provider.

DRA – Fields not populated

Field	Reason
start_date	Not available from data provider.
fluid	Not applicable; direct push technology used or non-well location.
viscosity	Not applicable; direct push technology used or non-well location.
hammer_wt	Not applicable; direct push technology used or non-well location.
hammer_fall	Not applicable; direct push technology used or non-well location.
lift_mechanism	Not applicable; direct push technology used or non-well location.

LTH – Fields not populated

Field	Reason
geo_unit_code_2	Not available from data provider.
remark_1	Not available from data provider or not applicable to data set.
remark_2	Not available from data provider or not applicable to data set.
Moisture	Not available from data provider.
permeable	Not available from data provider.
consolidated_yn	Not available from data provider.
color	Not available from data provider.
observation	Not available from data provider.
consistency	Not available from data provider.
sorting	Not available from data provider.
grainsize	Not available from data provider.
odor	Not available from data provider.

WEL – Fields not populated

Field	Reason
well_owner	Not available from data provider.
well_status	Not available from data provider.
datum_collect_method_code	Not available from data provider.
depth_measure_method	Not available from data provider.
stickup_height	Not available from data provider.
stickup_unit	Not available from data provider.
sump_length	Not applicable; no sumps in wells.
sump_unit	Not applicable; no sumps in wells.
installation_date	Not available from data provider.
construct_start_date	Not available from data provider.
construct_complete_date	Not available from data provider.
construct_contractor	Not available from data provider.
pump_type	Not applicable; no permanent pumps in wells.
pump_capacity	Not applicable; no permanent pumps in wells.
pump_unit	Not applicable; no permanent pumps in wells.
pump_yield	Not applicable; no permanent pumps in wells.
pump_yield_method	Not applicable; no permanent pumps in wells.
weep_hole	Not available from data provider.
head_configuration	Not available from data provider.
access_port_yn	Not available from data provider.
casing_joint_type	Not available from data provider.
perforator_used	Not available from data provider.
intake_depth	Not applicable; no permanent pumps in wells.
disinfected_yn	Not applicable; no water supply wells.
historical_reference_elev	Not available from data provider.
remark	Not available from data provider or not applicable to data set.

WSG – Fields not populated

Field	Reason
inner_diameter	Not available from data provider.
outer_diameter	Not available from data provider.
diameter_unit	Not available from data provider.
thickness	Not available from data provider.
thickness_unit	Not available from data provider.
slot_type	Not available from data provider.
slot_size	Not available from data provider.
slot_size_unit	Not available from data provider.
perf_length	Not available from data provider.
screen_type	Not available from data provider.
material_quantity	Not available from data provider.
material_density	Not available from data provider.
remark	Not available from data provider or not applicable to data set.

GWTR – Fields not populated

Field	Reason
corrected_depth	Not applicable; no correction necessary.
corrected_elevation	Not applicable; no correction necessary.
technician	Not available from data provider.
dry_indicator_yn	Not available from data provider.
measurement_method	Not available from data provider.
batch_number	Not available from data provider.
dip_or_elevation	Not available from data provider.
remark	Not available from data provider or not applicable to data set.

TBL – Fields not populated

Field	Reason
flowing_yn	Not available from data provider.
measurement_method	Not available from data provider.
capped_pressure	Not available from data provider.
capped_pressure_unit	Not available from data provider.
temperature	Not available from data provider.
temperature_unit	Not available from data provider.

Jennifer.Telford@ch2m.com

12/31/03 03:18 PM

To: Mirtha Capiro/R5/USEPA/US@EPA
cc: finnegan_brendan@bah.com, PPalena@rohmhaas.com, PCichy@rohmhaas.com, Joel.Wipf@ch2m.com, luck_kevin@bah.com
Subject: FW: Rohm and Haas Cincinnati Test Case - EPA Region 5 submission attached for your review

Please find attached the electronic submission for the Rohm and Haas Cincinnati test case data prepared on behalf of Rohm and Haas Company.

PLEASE NOTE: this electronic data submission is being sent in advance of EPA's full approval of the valid values requested on December 15, 2003 (request still pending). The data submission is dependent upon acceptance of these requested valid values. Once Rohm and Haas Company and CH2M HILL have been notified of the full valid value approval, CH2M HILL will submit the hard copy cover letter and CDROM containing the EDD files.

Because of the pending nature of the valid values, it is recommended that the electronic EDD files be processed only if all of the requested valid values are accepted. If any valid values are in question, please contact me before attempting to process the EDD files.

If you have any questions or concerns, please feel free to contact me at 703-471-6405 ext. 4336.

Thank you and Happy Holidays!

Jen Telford

CH2M HILL
13921 Park Center Road
Suite 600
Herndon, VA 20171
Phone (direct): 703.471.6405 ext. 4336
Fax (direct): 703.796.6192
Email: jtelfor1@ch2m.com


CIN20031215.OHD000724138.EPAR5EDDsRHCIN_EPAcoverletter_20031215.d